ζ

BAKER & MCKENZIE

RECEIVED
CENTRAL FAX CENTER

OCT 1 4 2004

Facsimile Transmission

Baker & McKenzie LLP 805 Third Avenue New York, NY 10022, USA

Tel: +1 212 751 5700 Fax: +1 212 759 9133 www.bakemet.com

Date

October 14, 2004

Phone

Fax

To

Examiner Alan D. Diamond, Group Art Unit 1753, Mail Stop Amendment,

703-872-9306

USPTO

From

Frank M. Gasparo

+1 212 891 3942

+1 212 310 1642

Client/Matter No.

Re

Application no. 09/682,363

Pages (w/cover)

64

Please see the attached.

Privacy And Confidentiality Notice

The information contained in this facsimile is intended for the named recipients only. It may contain privileged and confidential information and if you are not an intended recipient, you must not copy, distribute or take any action in reliance on it. If you have received this facsimile in error, please notify us immediately by a collect telephone call to Office Services at +1 212 751 5700 x 4048 and return the original to the sender by mall. We will reimburse you for the postage.

Baker & McKenzie LLP is a member of Baker & McKenzie International, a Swiss Verein.

Under the Paperwork Reduction Act of 199	U.S. I	Approved for use through 07/31/2008. OMB 0851-00 Patent and Trademark Office; U.S. DEPARTMENT OF COMMER, lection of information unless it displays a valid OMB control numb
	Application Number	09/682,363
TRANSMITTAL	Filing Date	B/24/2001
FORM	First Named Inventor	Anthony C. Zuppero
	Art Unit	1753
(to be used for all correspondence after initia		Alan D. Diamond
Total Number of Pages in This Submission	Attorney Docket Number	22122878-6
	ENCLOSURES (Check all	that apply)
Fee Transmittal Form	Drawing(s)	After Allowance Communication to TO
Fee Attached	Licensing-related Papers	Appeal Communication to Board of Appeals and Interferences
Amaindment/Reply After Final Affidavits/declaration(s) Extension of Time Request Express Abandonment Request Information Disclosure Statement Certified Copy of Priority Document(s) Repl / to Missing Parts/ Incomplete Application Reply to Missing Parts under 37 CFR 1.52 or 1.53	14, 2004.	Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) Proprietary Information Status Letter Other Enclosure(s) (please Identify below): PTO/SB/08A and B forms.
Firm Name	URE OF APPLICANT, ATTOR	NEY, OR AGENT
Baker & Mekenzie		
Signature 2-m-/		
Printed name Frank M. Gasparo, Esq.		
Date October 14, 2004	Re	g. No. 44,700
hereby certify that this correspondence is be	RTIFICATE OF TRANSMISSIO	
surricent postage as first class mail in an enve the date shown below: Signature Amelia Finker	iope addressed to: Commissioner for Pr	or deposited with the United States Postal Service with atents, P.O. Box 1450, Alexandria, VA 22313-1450 on
Typed or printed name And	a Inter	Date October 14, 2004

This collection o' information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentially is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, prepring, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Petent and Trademerk Offics, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

22122878-6

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

RECEIVED **CENTRAL FAX CENTER**

In re Application of: Anthony C. Zuppero et al.

Art Unit:

1753

OCT 1 4 2004

Serial No.:

09/682,363

Examiner:

Diamond, Alan D.

Filing Date:

August 24, 2001

Date:

October 14, 2004

TITLE:

PULSED ELECTRON JUMP GENERATOR

Mail Stop Amendment Commissioner for Patents P.C. Box 1450 Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

SIR:

- In accordance with the duty of disclosure under 37 C.F.R. § 1.56 and in 1. conformance with the procedures of 37 C.F.R. § § 1.97 and 1.98 and M.P.E.P. § 609, attorneys for Applicants hereby bring the following references, which are listed on the attached modified PTO Form 1449 to the attention of the Examiner. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.
- 2. Applicants respectfully request that the following co-owned patents and co-pending applications be considered and made of record in the present application:

CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being facsimile transmitted to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, Group Art Unit 1753 at (703) 872-9306 on October 14, 2004.

NYCL:MS/430373.1

US Patent Nos. 6,114,620 (cited on PTO-892 by the Examiner); 6,218,608 (cited on PTO-892 by the Examiner); 6,222,116 (cited on PTO-892 by the Examiner); 6,268,560 (cited on PTO-892 by the Examiner); 6,327,859 (cited on PTO-892 by the Examiner); 6,700,056 (cited on PTO-892 by the Examiner); 6,678,305; 6,649,823 (cited on PTO-892 by the Examiner); and

US Patent Application Nos. 10/759,341; 09/631,463; 10/052,004 (US-2003/0166307, cited on PTO-892 by the Examiner); 10/625,801; 10/185,086 (US-2003/0000570, cited on PTO-892 by the Examiner).

The references cited in each of those patents and applications are listed on

 Copies of the references listed on the modified PTO form 1449 will follow under a separate cover by first class mail due to their volume.

Form 1449 accompanying this information disclosure statement.

4. No fee is deemed necessary with the filing of these documents. If a fee is deemed necessary, we authorize the Commissioner of Patents and Trademarks to charge Deposit Account No.: 02-0393.

Respectfully submitted,

Frank M. Gasparo Registration No. 44,700 BAKER & McKENZIE 805 Third Avenue

New York, NY 10022 (212) 751-5700 telephone (212) 759-9133 facsimile

Attachments

. 10

Sheet

PTO/SB/08A (08-03) Approved for use through 07/31/2008, OMB 0851-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

22122878-6

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of Information unless it contains a valid OMB control number. Complete if Known Substitute for form 1449/PTO **Application Number** 09/682,363 Filing Date **INFORMATION DISCLOSURE** 8/24/2001 First Named Inventor Anthony C. Zuppero STATEMENT BY APPLICANT Art Unit 1753 (Uso as many sheets as necessary) **Examiner Name** Alan D. Diamond

Attorney Docket Number

U. S. PATENT DOCUMENTS Examine Initials* **Document Number** Publication Date MM-DD-YYYY Name of Patentee or Pages, Columns, Lines, Where Applicant of Cited Document Relevant Passages or Relevant Number-Kind Code^{2 (# ko} Floures Appear ^{US-} 6114620A 09-2000 Zuppero et al. ^{US-} 4753579 06-1988 Murphy US- 5525041 3 06-1996 Deak ^{US-} 5299422 4 04-1994 Nakagawa et al. US- 5317<u>876</u> 5 05-1994 Nakagawa et al. us- 5593509 8 01-1997 Zuppero et al. US- 5641585 9 06-1997 Lessing et al. US- 20020017827 A1 02-2002 Zuppero et al.

		FORE	GN PATENT DOCU	MENTS		
Examiner Initials*	Cite No.	Foreign Patent Document Country Code "Number 4" 'Aind Code (If known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	7

Examiner		T=	
Signature		Date	
		Considered	
*EXAMINER:	Initial if reference considered, whether or not disting a land	<u> </u>	

*EXAMINER: Initial if reference considered, whether or not ditation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. Applicant's unique citation designation number (optionat). See Kinds Codes of USPTO Patent Documents at www.uspto.gog or MPEP 901.04. Enter Office that Issued the document, by the two-letter code (WIPO Standard ST.3). For Ities appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. Applicant is to place a check mark here if English language

Transtation is attached.

This collection of Information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND

If you need assistence in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

PTO/S8/08A (08-03) Approved for use through 07/31/2008, CMB 0651-0031 U.S. Patent and Trademerk Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number. Complete if Known

INFORMATION DISCLOSURE

Substitute for form 1449/PTO

STATEMENT BY APPLICANT (Use as many sheets as necessary)

Application Number 09/682,363 Filing Date 8/24/2001 First Named Inventor Anthony C. Zuppero Art Unit 1753 **Examiner Name** Alan D. Diamond Attorney Docket Number | 22122878-6

U. S. PATENT DOCUMENTS Examiner Cite Document Number Name of Patentee or Applicant of Cited Document **Publication Date** Pages, Columns, Lines, Where Initials* MM-DD-YYYY Relevant Passages or Relevant Number-Kind Code^{2 (7 known)} Figures Appear US- 20020070632 25 06-2002 Zuppero et al. ^{US-} 4651324 26 03-1987 Prein et al. US- 5337329 27 08-1994 Foster, Jack US- 4756000 28 07-1988 Macken, John A. ^{US-} 5999547 29 12-1999 Schneider et al. US- 5048042 30 09-1991 Moser et al. US- 6268560 31 07-2001 Zueppero et al. ^{US-} 5587827 32 12-1996 Hakimi et al. ^{US-} 6114620 33 09-2000 Zuppero et al. US-4012301 03-1977 34 Rich et al. US- 5470395 35 11-1995 Yater et al. US-36 ÚSus-US-

	FOREIGN PATENT DOCUMENTS										
Examiner Initials* Country Code ³ "Number * "Kind Code ³ (if known)		Foreign Patent Document	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages						
	MM-DD-YYYY	Approximent of the approximent	Or Relevant Figures Appear	Γ*							

Examiner Date	
Signature Considered	

*EXAMINER: Initial if reference considered, whether or not diation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. Applicant's unique citation designation number (optional). See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. (Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. Applicant is to place a check mark here if English language Translation is attached.

Transation is attached.
This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will very depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, cell 1-800-PTO-9199 (1-800-786-9199) and select option 2.

'n

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Upder the Paperwork Reduction Act of 1995, no persons are required to	respond to a collection of inform	nation unless it contains a valid OMB control n	umber			
	Complete if Known					
Substitute for form 1449/PTO	Application Number	09/682,363				
	Filing Date	8/24/2001				
INFORMATION DISCLOSURE	First Named Inventor	Anthony C. Zuppero				
STATEMENT BY APPLICANT	Art Unit	1753				
(Use as many sheets as necessary)	Examiner Name	Alan D. Diamond				

	•	-		I				
Sheet			of		Attorney	Docket Number	22122878-6	
ططانا إنا								
				U.S. PATENT	DOCU	MENTS		
Examiner	Cite	U.S. Palent D		Name of Patentee or App	dicant	Date of Publication of	Pages, Columns	, t.ines,
inid als	No.1		(K known)	of Cited Document	JII OLI IX	Cited Document MM-DD-YYYY	Where Reter Passages or Re Figures App	kwant
	1	5,651,83	B _ _	Fraas et al	•	07-29-1997		
	2	5,932,68		DeBellis et s	il.	08-03-1999		
			-					
							<u> </u>	
					-			
				· · · · · · · · · · · · · · · · · · ·	**		† · · · · · · · · · · · · · · · · · · ·	
	一十							
			$\neg \vdash$				<u> </u>	·
								** ***********************************
								
						1		
			-	·			ļ	
	-					 		
	\rightarrow				· · · · · · · · · · · · · · · · · · ·		 	
		······		 -		 		
						I	J	

.05				FORE	IGN PATENT DOCUMEN	rs		
Examinar Cite Initiats No.1	F	oreign Patent Do	cument	Name of Patentee or	Date of Publication of	Pages, Columns, Lines.	T	
	Office ³	Number ⁴	Kind Code ^s (# known)	Applicant of Cited Document	Cited Document MM-DD-YYYY	Where Role vant Passages or Retevant Floures Appear		
								Ţ
						 		╀
						 		╀
								十
								1
								I
		 						1
		├	· · · · · · · · · · · · · · · · · · ·		······································	 		+

Examiner	Date	
Signature	Considered	
استسست سا		

¹ Unique citation designation number. ² See attached Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WiPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precade the sental number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WiPO Standard ST. ¹6 if possible. ⁴ Applicant is to place a check mark here if English language Translation is attached.



Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS, SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

^{*}EX.\MINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in expformance and not considered. Include copy of this form with next communication to applicant.

	Sheet of
Attorney Docket Number	Application Number
· 22122878-6	09/682,363
Applicants Anthony C. Zuppero et	al
	Group Art Unit
8/24/2001	1753
	Applicants Anthony C. Zuppero et

EXAMINER	DOCUMENT	DATE	NAME	CLASS	LEUDCT ACC	THIS END
INITIAL	NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE
	_					
						-
•						

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSI.A'	TION NO	
		<u> </u>				1 100	NO	
		_			-	┼		
		- -				 		
 		- -			· · · · · · · · · · · · · · · · · · ·			
	- - <u>-</u> -							
				_ 1	0			

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)

	(110)
	"Electron-hole pair creation by reactions at metal surfaces", downloaded from www.aps.org/meet/CENT99/BAPS/abs?S6980001.html
	American Physical Society Centennial Meeting Program, Atlanta, GA. 20-26 March 1999
	"Electron-Hole Pair Creation at Ag and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium", Physical Review Letters, Volume 82, Number 2. 11 January 1999
EXAMINER:	DATE CONSIDERED:
RYWINSK: I	nitial if citation considered, whether or not citation is in conformance with MPBP § 609; Draw line through citation if not in

conformatice and not considered. Include copy of this form with next communication to the applicant.

Computer-Generated Form PTO-1449 (Rev 2-92)

[NYC] 341763.1

..Sheet

PTC/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete If Known Application Number 09/682,363 Filing Date 8/24/2001 First Named Inventor Anthony C. Zuppero Art Unit 1753 **Examiner Name** Alan D. Diamond Attorney Docket Number | 22122878-6

			U.S. PATE	NT DOCUMENTS	
Examiner Initials	I a	Document Namber Number- Kind Code ¹ (if known	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant
	<u> </u>	us. 4,634,641 ·	01-06-1987	Nozik	Figures Appear
	2	US- 5,488,231	01-30-1996	Kwon et al.	
	3	US- 5,757,833	05-26-1998	Arakawa et al.	
	4	US- 5,917,195	06-29-1999	Brown	
	5	us- 6,067,309	05-23-2000	Onomura et al.	
	6	us- 6,114,620	09-05-2000	Zuppero et al.	· · · · · · · · · · · · · · · · · · ·
	7	US- 6,218,608	04-17-2001	Zuppero et al.	
	8	us- 6,222,116	04-24-2001	Zuppero et al.	· · · · · · · · · · · · · · · · · · ·
		US-			~
		US-			
		US-			
		U\$-			
		US-			

		FOR	IGN PATENT D	OCUMENTS		
Examiner initials	Cite No.1	Foreign Patent Document Caunty Code 2 W Income)	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relovant Passages or Relovant Figures Appear	76
ļ						

Examiner:	Date	
Signature		
(10 to 10 t	Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.64. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. Applicant is to place a check mark here if English language Translation is attached.

Surden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PAGE 10/64 * RCVD AT 10/14/2004 5:46:18 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/10 * DNIS:8729306 * CSID:2128913547 * DURATION (mm-ss):34-42

Steet

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0851-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Inder the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete il Known				
Application Number	09/682,363			
Filing Date	8/24/2001			
First Named Inventor	Anthony C. Zuppero			
Art Unit	1753			
Examiner Name	Alan D. Diamond			
Attorney Docket Number	22122878-6			

U.S, PATENT DOCUMENTS							
Examher	Clia	Document Number	Publication Date	Name of Patentee or	Pages, Columns, Lines, Where		
		Number - Kind Code ² (<i>if kn</i> own		Applicant of Cited Document	Relevant Passages or Relevant Figures Appear		
	1	us-6084173	07/04/2000	DiMatteo			
	Ļ	US-					
		us-					
		us-					
		us-					
		US-					
		US-					
		US-					
		US-					
		US-					
		US-		Consideration to the second control of the s	•		
		US-			Control of the second s		
		vs-					
		US-					
		US-					
		US-			A CONTRACTOR OF THE PROPERTY O		
		US-					
		U8-					
		US-					
		us-					

	FOREIGN PATENT DOCUMENTS						
Examiner Ir itlais	Cite No.1	Foreign Patent Document Opunity Code 3 - Number 4 - Kind Code 5 (# Innown)	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear		
		of transmissions and the series and the series of the series and the series of the ser					
					## ### ### ### ### ### ### ### #### ####	-	
		erikk i ka i ka i ka kalantiki i i i i i i i i i i i i i i i i i i					
					TH Page Annual Commission of the Assessment of the State	╀	
			P	and the control and the state of the state o		F	
					مىي پىدىن يې دىندىن يېرىن دې	 	

	Date	Examiner
	Considered	Signature
	Considered	 Signature

English ranguage translation is attached.

Birden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 931.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the sarial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08A (08-03)

Approved for use through 07/31/2008. OMB 0851-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Su satitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Complete if Known				
Application Number	09/682,363			
Filing Date	8/24/2001			
First Named Inventor	Anthony C. Zuppero			
Art Unit	1753			
Examiner Name	Alan D. Diamond			
Attorney Docket Number	22122878-6			

Examiner Initials	Cito No.	OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), numb	
	2	HARRISON, P. et al., The Carrier Dynamics of Far-Infrared Intersubband Lasers and Tunable Emitters, institute of Microwaves and Photonics, University	
	3	WEBER, et al., to X2 Electron Transfer Times in Type-II GaAs/A1As Superflattices Due to Emission of Confined and Interface Phonons, Superlattices and Microstructures, Vol. 23, No. 2 (1998).	
	4	FANN, W.S. et al., Electron Thermalization in Gold, Physical Review B, Brief Reports, Vol. 46, No. 20, (1992)	
	5	Ultrafast Surface Dynamics Group, Time-Resolved Two-Photon Photoemission (TR-2PPE), http://www.llp.physik.uni-essen.de/aeschlimann/2y_photo.htm	
magayi ah masilga	6	LEWIS et al., Vibrational Dynamics of Molecular Overlayers on Metal Surfaces, Dept. of Chemistry, University of Pennyslvania, http://lorax.chem.upenn.edu/molsurf/cucotalk/html.	1
	4	RETTNER et al., Dynamics of the Chemisorption of 02 on Pt(111): Dissociation via Direct Population of a Molecularly Chemisorbed Precursor at High Incidence Kinetic Energy, The Journal of Chemical Physics, Vol. 94, Issue 2 (1991)	
	8	FRIEDMAN et al., SiGe/Si THz Laser Based on Transitions Between Inverted Mass Light-Hole and Heavy Hole Standards, Applied Physics Letters, Vol. 78, No. 4 (2001)	
	9	HARRISON et al., Population -Inversion and Gain Estimates for a Semiconductor TASER	ا
	10	HARRISON et al., Theoretical Studies of Subband Carrier Lifetimes n an Optically Pumped Three-Level Terahertz Laser, Superlattices and Microstructures, Vol. 23, No. 2 (1998)	
	11	HARRISON et al., Room Temperature Population Inversion in SIGe TASER Designs, IMP, School of Electronic and Electrical Engineering, The University of Leeds	
L. Mily AMMONINUMENT	12	SUN et al., Pheonon-Pumped Terhertz Gain in n-Type GaAs/AlGaAs Superlattices, Applied Physic Letters, Vol. 7, No.22 (2001)	

Examiner	Date	
Signature	Considered	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burrien Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the Individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Approved for use through 07/31/2008. OMB 0651-0031 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of Information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

Sheet

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

of

Complete if Known					
Application Number	09/682,363				
Filing Date	8/24/2001				
First Named Inventor	Anthony C. Zuppero				
Art Unit	1753				
Examiner Name	Alan D. Diamond				
Attorney Docket Number	22122878-6				

Examiner initials	Cite No. 1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), muhiisher, city and/or country where numbished.	7
,	13	ALTUKHOV et al., Towards Si1-xGex Quantum-Well Resonant-State Terahertz Laser, Applied Physics Letters, Vol. 79, No. 24 (2001)	
	14	SUN et al., Intersubband Lasing Lifetimes of SiGe/Si and GaAs/AlGaAs Multiple Quantum Well Structures, Applied Physics Letters, Vol. 66, No. 25 (1995)	
	15	SUN et al., Phonon Pumped SiGe/Si Interminiband Terahertz Laser	
	16	SOREF et al., Terhertz Gain in a SIGe/SI Quantum Starcase Utilizing the Heavy-Hole Inverted Effective Mass, Applied Physics Letters, Vol. 79, No. 22 (2001)	
	17	AESCHLIMANN et at., Competing Nonradative Channels for Hot Electroni Induced Surface Photochemistry, Chemical Physics 202, 127-141 (1996)	
	18	AUERBACH, Daniel J., Hitting the Surface-Softly, Science, Vo. 294, pp. 2488- 2489 (2001)	
	19	BADESCU et al., Energetics and Vibrational States for Hydrogen on Pt(111), Physical Review Letters, Vol. 88, No. 13 (2002)	
•:*	20	BALANDIN et al., Effect of Phonon Confinement on the Thermoelectric Figure of Merit of Quantum Wells, Journal of Applied Physics, Vol. 84, No. 11 (1998)	
	21	BARTELS et al., Coherent Zone-Folded Longitudinal Acoustic Phonons in Semiconductor Superlattices: Excitation and Detection, Physical Review Letters, Vol. 82, No. 5 (1999)	
	22	BAUMBERG et al., Últrafast Acoustic Phonon Ballistics in Semiconductor Heterostructers, Physical Review Letters, Vol. 78, No. 17 (1997)	
1. (1) F Salai (1) (1) (1) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2	23	BEDURFTIG et al., Vibrational and Structural Properties of OH Adsorbed on Pt(111), Journal of Chemical Physics, Vol. 111, No. 24 (1999)	-

Examiner	Date	
Signature	Considered	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and no: considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. OO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet of

Col	mplete if Known
Application Number	09/682,363
Filing Date	8/24/2001
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122070 6

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examiner Initials	Cite No. 1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the frem (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-tasue number(s), nublisher, city and/or country where published.	
	24	VALDEN et al., Onset of Catalytic Activity of Gold Clusters on Titania with the Appearance of Nonmetallic Properties, Science, Vol. 281 (1998)	Ī
	25	TiO2(110), J. Vac. Scl. Technol. A17(4) (1999)	Ī
		BEZANT et al., Intersubband Relaxation Lefetimes in p-GaAs/AlGaAs Quantum Wells Below the LO-Ohonon Energy Measured in a Free Electron Laser (Experiment, Semicond. Sci. Technol. 14 (1999)	
		BRAKO et al., Interaction of CO Molecules Adsorbed on Metal Surfaces, Vacuum 61,89-93 (2001)	T
	28	BURGI et al., Confinement of Surface State Electronis In Fabry-Perot Resonators, Physical Review Letters, Vol. 81, No. 24 (1998)	
		BURGI et al., Probing Hot-Electron Dynamics at Surfaces with a Cold Scanning Tunneling Microscope, Physical Review Letters, Vol. 82, No. 22 (1999)	
The separate and the second	30~	CHANG, Y.M., Interaction of Electron and Hold Plasma with Coherent Longitudinal Optical Phonons in GaAs, Applied Physics Letter, Vol. 80, No. 14 (2002)	T
	31	CHANG et al., Observation of Coherent Surface Optical Phonon Oscillations by Time-Resolved Surface Second-Harmonic Generation, Physical Review Letters, Vol. 78, No. 24 (1997)	1
	32	CHANG et al., Coherent Phonon Spectroscopy of GaAs Surfaces Using Time-Resolved Second-Harmonic Generation, Chemical Physcis 251, 283-308 (2000)	
,	33	CHANG et al. Observation of Local-Interfacial Optical Phonons at Burled Interfaces Using Time-Resolved Second Harmonic Generation, Physical Review B, Vol. 59, No. 19 (1999)	
·	34	CHEN et al., Stimulate-Emission-Induced Enhancement of the Decay Rate of Longitudinal Optical Phonons in III-V Semiconductors; Applied Physics Letters, Vol. 80, No. 16 (2002)	1

والمراجع	
Examiner	Date
Signature	Considered

Burdon Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any commerts on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, V/ashington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Substitute for form 1449/PTO

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Palent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Complete if Known Application Number 09/682,363 Filing Date 8/24/2001 First Named Inventor Anthony C. Zuppero Art Unit 1753 **Examiner Name** Alan D. Diamond Attorney Docket Number 22122878-6

	1	Include name of the author (in CAPITAL LETTERS), little of the article (when appropriate), title of the	-
Examiner Initials	Cite No. ¹	item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue	
	35	CORCELLI et al., Vibrational Energy Pooling in CO on NaCl(100): Methods, Journal of Chemical Physics, Vol. 116, No. 18 (2002)	
	36	FIERZ et al., Time-Resolved 2-Photon Photolonization on Metallic Nanoparticles, Appl. Phys. B 68 (1999); http://www.ilp.physik.uni-essen.de/aeschlimann/abstratct.htm#6	
	37	BEZANT et al., Intersubband Relaxation Lifetimes in p-GaAs/AlGaAs Quantum Wells Below the LO-Phonon Energy Measured in a Free Electron Laser Experiment, Semicond. Sci. Technol., 14 No 8 (1999)	_
	38	BONDZIE et al., Oxygen Adsorption on Well-Defined Gold Particles on TIO2(110), Journal of Vacuum Science & Technology A: Vacuum, Surfaces and Films, Vol. 17, Issue 4, pp. 1717-1720 (1999)	
	39	HARRISON et al., Maximising the Population Inversion, by Optimizing the Depopulation Rate, in Far-Infared Quantum Cascade Lasers (2001)	
	40	HARRISON et al., The Carrier Dynamics of Terahertz Intersubband Lasers, Some Publishing Company,(1999)	
	41	FANN et al., Electron Thermalization in Gold, Physical Review B, Vol. 46, No. 20 (1992)	Ī
	42	CUMMINGS et al., Ultrafast Impulsive Excitation of Coherent Longitudinal Acoustic Phonon Oscillations in Highly Potoexcited InSb, Applied Physics Letters, Vol. 79, No. 6 (2001)	ľ
	43	CHIANG, T.C., Photoemission Studies of Quantum Well States in Thin Films, Surface Science Reports 39, pp. 181-235 (2000)	t
		DEBERNARDI et al., Anharmonic Phonon Lifetimes in Semiconductors from Density-Functional Perturbation Theory, Physical Review Letters, Vol. 75, No. 9 (1995)	F
	45	DAVIS et al., Kinetics and Dynamics of the Dissociative Chemisorption of Oxygen on Ir(111), J. Chem. Phys. 109 (3) (1997)	-

Examiner		
r-yannile)	Date	
Cinn at the little of the litt	June	
Signature	Considered	
	. i Considereni	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any Office, Y/ashington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Sut stitute for form 1449/PTO

PTC/SB/088 (10-01)

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

	00,	mproto n renovni
	Application Number	09/682,363
	Filing Date	8/24/2001
	First Named Inventor	Anthony C. Zuppero
	Art Unit	1753
	Examiner Name	Alan D. Diamond
_	Attorney Docket Number	22122878-6

Complete if Known

Examiner Initials* /	Cite No. 1	include name of the author (in CAPITAL LETTERS), life of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), nuhlisher, city and/or country where mublished	7
/	46	CHOI et al., Ultrafast Carrier Dynamics in a Highly Excited GaN Epilayer, Physical Review B., Vo. 63, 115315 (2001)	
	47	DIEKHONER et al., Parallel Pathways in Methanol Decomposition on PT(111), Surface Science 409, pp. 384-391 (1998)	Ī
	48	DEMIDENKO et al., Piezoelectrically Active Acoustic Waves Confined In a Quantum Well and Their Amplification by electron Drift, Semiconductor Physics,	
	49	Quantum Electronics & Optoelectronis, Vol. 3, No. 4, pp. 427-431 (2000) de PAULA et al., to X2 Electron Transfer Times in Type-II Superlattices Due to Emission of Confined Phonons, Appl. Phys. Lett. 65 (10) (1994)	
	50	de PAULA et al., Carrier Capture via Confined Phonons in GaAs-AlGaAs Multiple Quantum Wells, Selcond, Sci. Technol, 9, pp. 730-732 (1994)	
	51	DEMIDENKO et al., Amplification of Localized Acoustic Waves by the Electron Drift in a Quantum Well, Semiconductor Physics, Quantum Electronics & Optoelectronics, Vol. 2, No. 1, pp. 11-24 (1999)	
	52	DEMIDENKO et al., Generation of Coherent Confined Acoustic Phonons by Drifting Electrons in Quantum Wire; Semiconductor Physics, Quantum Electronics-& Optoelectronics, Vol. 3, No. 4, pp. 432-437-(2000).	
	53	DENZLER et al., Surface Femtochemistry: Ultrafast Reaction Dynamics Driven by Hot Electron Mediated Reaction Pathways, World Scientific (2001)	
	54	FATTI et al., Temperature-Dependent Electron-lattice Thermalization in GaAs, Physical Review B, Vol. 59, No. 7 (1999)	
	3 5	ANASTASSAKIS et al., The Physics of Semiconductors, Vol. 2, World Scientific (1990)	-
	56	de PAULA et al., Carrier Capture Processes in Semiconductor Superlattices due to Emission of confined Phonons, J. Appl. Phys. 77 (12) (1995)	-

Examiner	Date	
Signature	 Considered	

Burdon Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademerk Officer, Washington, DC 20231. DO NOT GEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08B (10-01)

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Palent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

U.S. Palent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Onded Company to an Approved to a collection of information unless it contains a valid OMB

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Col	mplete if Known
Application Number	09/682,363
Filing Date	8/24/2001
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-6

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	,
Examiner /	Cite No.1	include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the Kem (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue mumber(s), publisher, city and/or country where published	Ţ
	57	ENGSTROM et al., Comparing the Vibrational Properties of Low-Energy Modes of Molecular and an Atomic Adsorbate: CO and O on Pt(111), Journal of Chemical Physics, Vol. 112, No. 4 (2000)	а
	58	GLAVIN et al., Generation of High-Frequency Coherent Acoustic Phonons in a Weakly Coupled Superlattice, Applied Physics Letters, Vol. 74, No. 23 (1999)	
		FRIEDMAN, SiGe/Si Thz Laser Based on Transitions Between Inverted Mass Light-Hole and Heavy-Hole Subbands, Applled Physics Letters, Vol. 78, No. 4 (200	1
	60	ERMOSHIN et al., Vibrational Energy Relaxation of Adsorbate Vibrations: A theoretical Study of the H/Si(111) System, J. Chem. Phys. 105 (20) (1996.	
	61	GLAVIN et al., Acoustic Phonon Generation in A Superlattice Under the Hopping Perpendicular Transport, United Nations Educational Scientific and Cultural Organization and International Atomic Energy-Agency (1998)	
	62	GERGEN et al., Chemically Induced Electronic Excitations at Metal Surfaces, Sciencé, Vol. 294 (2001).	
	63	HAGSTON et al., Simplified Treatment of Scattering Processes in Quantum Well Structures, Journal of Applied Physics, Vol. 90, No. 3 (2001).	
	64	HARRISON et al., Room Temperature Population Inversion in SiGe TASER design	s
	65	HARRISON et al. The Carrier Dynamics of Terhertz Intersubband Lasers, Some Publishing Company (1999)	1
	66	HARRISON et al., Population-Inversion and Gain Estimates for a Semiconducor Taser	
	67	HARRISON et al., Theoretical studies of Subband Carrier Lifetimes in an Optically Pumped Three-Level Terahertz Laser, Superlattices and Microstructures, Vol. 23, No. 2 (1998)	

Examiner	Date
Signature	Considered
بيده المتحدد ا	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burlien Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Petent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08B (10-01)

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Linder the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known		
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	

Examiner Initials	Cite No.1	include name of the author (in CAPITAL LETTERS), title of the erticle (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), outlisher, div and/or country where outlished		
	68 HARRISON et al., The Carrier Dynamics o Far-Infared Intersubband Lasers and Tunable Emitters, www.ee.leeds.ac.uk/homes/ph/			
Bayeles - 448-4400 467-4000 4	69	HESS et al., Hot Carrier Relaxation by Extreme Electron-LO Phonon Scattering in GaN		
	70	HOHLFELD et al., Electron and Lattice Dynamics Following Optical Excitation of Metals, Chemical Physics 251, pp. 237-258 (2000)		
	71	HUANG et al., Vibrational Promotion of Electron Transfer, Science, Vol. 290 (2000)	1	
	72	KAWAKAMI et al., Quantum-well States in Copper Thin Films, Nature, Vol. 398 (1999)	1	
***************************************	73	KOHLER et al., Enhanced Electron-Phonon Coupling at the Mo and W (110) Surfaces Induced by Adsorbed Hydrogen, mtrl-th/9510004 (1995)		
	74	LEWIS et al., Continuum Elastic Theory of Adsorbate Vibrational Relaxation, J. Chem. Phys. 108 (3) (1998)		
	75	LEWIS et al., Controlling Adsorbate Bivrational Lifetimes Using Superlattices, Physical Review B, Vol. 63, 085402 (2001)		
	76	KOMIRENKO, Sergiy M., Phonons and Phonon-Related Effects in Prospective Nanoscale Semiconductor Devices (2000)		
	77	HUANG et al., Observation of Vibrational Excitation and Deexcitation for NO(v=2) Scattering from Au(111): Evidence for Electron-Hole-Pair Mediate Energy Transfe Physical Review Letters, Vol. 84, No. 13 (2000)		
	78	LEWIS et al, Substrate-Adsorbate Coupling in Co-Adsorbed Copper, Physical Review Letters, Vol. 77, No. 26 (1996)	_	

Examiner	Date
Signature	Considered

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Officer, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here # English (anguage Translation is attached.

PTO/SB/08A (08-03)

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

Sheet

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

of

	Complete if Known		
Ā	pplication Number	09/682,363	
F	iling Date	8/24/2001	
F	irst Named Inventor	Anthony C. Zuppero	
A	rt Unit	1753	
E	xaminer Name	Alan D. Diamond	
A	ttomey Docket Number	22122878-6	

Examiner	Cite	tectude name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the kem (book, magazine, journal, serial, symposkum, catalog, etc.), date, page(s), volume-issue	
Initials	No.1	number(s), nublisher, city and/or country where published	l
	79	KRAUSS et al., Coherent Acoustic Phonons in a Semiconductor Quantum Dot, Physical Review Letters, Vol. 79, No. 25 (1997)	
	80	LUGLI et al., Interaction of Electrons with Interface Phonons in GaAs/AIAs and GaAs/AIGaAs Heterostructures, Semicond. Sci. Technol. 7 (1992)	Ì
* *	81	NIENHAUS et al., Electron-Hole Pair Creation at Ag and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium, Physical Review Letters, Vol. 82, No. 2 (1999)	ĺ
THE PERSON NAMED IN COLUMN	82	MULET et al., Nanoscale Radiative Heat Transfer Between a Small Particle and a Plane Surface, Applied Physics Letters, Vol 78, No. 19 (2001)	l
	83	NIENHAUS et al., Direct Detection of Electron-Hole Pairs Generated by Chemical Reactions on Metal Surfaces, Surface Science 445, pp. 335-342 (2000)	
	84	NIENHAUS, Hermann, Electronic Excitations by Chemical Reactions on Metal Surfaces, Surface Science Reports 45, pp. 1-78 (2002)	
	85	NOLAN et al., Translational Energy selection of Molecular Precursors to Oxygen Adsorption on Pt(111), Physical Review Letters, Vol. 81, No. 15 (1998)	
		NIENHAUS et al., Selective H Atom Sensors Using Ultrathin Ag/Si Schottky Diodes Applied Physics Letters, Vol. 74, No. 26 (1999)	
	87	NOLAN et al., Molecularly Chemisorbed Intermediates to Oxygen Adsorption on Pt(111): A Molecular Beam and Electron Energy-Loss Spectroscopy Study, Journa of Chemical Physics, Vol. 1.11, No. 8 (1999)	-
	88	NOLAN et al., Direct Verification of a High-Translational-Energy Molecular Precurs to Oxygen Dissociation on Pd(111), Surface Science 419 (1998)	0
	89	OGAWA et al., Optical Intersubband Transitions and Femtosecond Dynamics in Ag/Fe(100) Quantum Wells, Physical Review Letters, Vol. 88, No. 11 (2002)	

سعمسي عم		_
lExaminer	Date	
451	Date	
Signature l	Considered	
	i Consideredi	

^{*}EXAM NER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office. Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Substitute for form 1449/PTO

Sheet

PTO/SB/08A (08-03)
Approved for use through 07/31/2008. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of Information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

	Complete if Known		
	Application Number	09/682,363	******
	Filing Date	8/24/2001	
	First Named Inventor	Anthony C. Zuppero	
	Art Unit	1753	
ļ	Examiner Name	Alan D. Diamond	-
1	Attorney Docket Number	22122878-6	

Examiner Initials	Cite No.1	include name of the author (in CAPITAL LETTERS), tille of the article (when appropriate), tille of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-lesue oumber(s), mutilisher, city and/or country where mutilished.
	90	PLIHAL et al., Role of Intra-Adsorbate Coulomb Correlations in Energy Transfer at Metal Surfaces, Physical Review B, Vol. 58, No. 4 (1998)
	91	PAGGEL et al., Quantum-Well States as Fabry-Perot Modes in a Thin-Film Electro
-	92	PAGGEL et al., Quasiparticle Lifetime in Macroscopically Uniform Ag/Fe(100) Quantum Wells, Physical Review Letters, Vol. 81, No. 25 (1998)
	93	PAGGEL et al., Quantum Well Photoemission from Atomically Uniform Ag Films: Determination of Electronic Band Structure and Quasi-Particle Lifetime in Ag(100) Applied-Surface-Science-162-163, pp78-85-(2000)
	94	PERSSON et al., A First-Principles Potential Energy Surface for Eley-Rideal Reaction Dynamics of H Atoms on Cu(111), Journal of Chemical Physics, Vol. 110 No. 4 (1999)
	1	OZGUR et al., Control of Coherent Acoustic Phonons in InGaN Multiple Quantum Wells, arXiv:cond-mat/0010170 (2000)
		STANTON et al., Energy Relaxation by Hot Electrons in n-Gan Epilayers, Journal Applied Physics, Vol. 89, No. 2 (2001)
	97	STIPE et al., Atomistic Studies of O2 Dissociation on Pt(111) induced by Photons, Electrons and by Heating, J. Chem. Phys. 107 (16) (1997)
-	98	SUN et al., Phonon Pumped SiGe/Si Interminiband Terahertz Laser, pp. 1-11
	99	SOREF et al., Terahertz Gain in a SiGe/Si Quantum Staircase Utilizing the Heavy-Hole Inverted Effective Mass, Applied Physics Letters, Vol. 79, No. 22 (200
	100	QU et al., Long-Lived Phonons, Physical Review B, Vol. 48, No. 9 (1993)

Examiner	Da	ite	
Signature	Co	nsidered	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any commands on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office. Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)
Approved for use through 07/31/2008. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Unlier the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Complete if Known Substitute for form 1449/PTO Application Number

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

09/682,363 Filing Date 8/24/2001 First Named Inventor Anthony C. Zuppero Art Unit 1753 Examiner Name Alan D. Diamond Attorney Docket Number 22122878-6

Examiner initials	Cite No.1	include name of the author (in CAPITAL LETTERS), title of the srticle (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, sic.), date, page(s), volume-issue number(s), nublisher, city and/or country where mublished.	ŀ
	101		
,	102	SMIT et al., Enhanced Tunneling Across Nanometer-Scale Metal-Semiconductor Interfaces, Applied Physics Letters, Vol. 80, No. 14 (2002)	
		QIU et al., Long-Distance and Damping of Low-Frequency Phonon Polariton In LiNbO3, Physical Review B, Vol. 56, No. 10 (1997)	
	104	ROUSSE et al, Non-Thermal Melting in Semiconductors Measured at Femiosecon Resolution, Nature, Vol. 410 (2001)	d
***************************************	105	SCHELLING et al., Phonon Wave-Packet Dynamics at Semiconductor Interfaces t Molecular-Dynamics Simulation, Applied Physics Letters, Vol. 80, No. 14 (2002)	5)
P. Phartie d'Fr. del del richiologie	106	SHIKIN et al., Phase Accumulation Model Analysis of Quantum Well Resonances Formed in Ultra-Thin Ag, Au Films on W(110), Surface Science (2001)	
		SNOW et al., Ultrathin PtSi Layers Paterned by Scanned Probe Lithography, Appli Physics Letters, Vol. 79, No. 8 (2001)	ı
a fa campagnati bistoriaci	108	PRABHU et al., Femtosecond Energy Relaxation of Nonthermal Electrons Injected p-doped GaAs Base of a Heterojunction Bipolar Transistor, Journal of Applied Physics, Vol. 90, No. 1 (2001)	
	109	TSAI et al., Theoretical Modeling of Nonequilibrium Optical Phonons and Electron Energy Relaxation in GaN, Journal of Applied Physics, Vol. 85, No. 3 (1999)	
	110	TRIPA et al., Surface-Aligned Photochemistry: Aiming Reactive Oxygen Atoms Alo a Single Crystal Surface, Journal of Chemical Physics, Vol. 112, No. 5 (2000)	r
	111	TRIPA et al., Surface-Aligned Reaction of Photogenerated Oxygen Atoms with Carbon Monoxide Targets, Nature, Vol. 398 (1999)	-

Examiner	Date	
Signature	 Considered	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Oraw line through citation if not in conformance and no. considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique cliation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)

Complete If Known

09/682,363

Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO **Application Number** Filing Date INFORMATION DISCLOSURE STATEMENT BY APPLICANT

8/24/2001 First Named Inventor Anthony C. Zuppero Art Unit 1753 Examiner Name Alan D. Diamond

(Use as many sheets as necessary)

Attorney Docket Number | 22122878-6

Examiner Initials	Cite No.1	include name of the author (in CAPITAL LETTERS), tille of the article (when appropriate), tille of the lem (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	112	TRIPA et al., Kinetics Measurements of CO Photo-Oxidation on Pt(111), J. Chem. Phys. 105 (4) (1996)
	113	TAYLOR et al., Strong Electron-LO Phonon Scattering and Hot Carrier Relaxatin I
	114	SUN et al., Phonon-Pumped Terahertz Gain in n-Type GaAs/AlGaAs Superlattices Applied Physics Letters, Vol. 78, No. 22 (2001)
		TOM et al., Coherent Phonon and Electron Spectroscopy on Surfaces Using Time-Resolved Second-Harmonic Generation
		TIUSAN et al., Quantum Coherent Transport Versus Diode-Like Effect in Semiconductor-Free Metal/Insulator Structure, Applied Physics Letters, Vol. 79, No. 25 (2001)
	117	STROMQUIST et al., The Dynamics of H Absorption in and Adsorption on Cu(111 Surface Science 397, pp. 382-394 (1998)
	118	TRIPA et al., Surface-Aligned Photochemistry: Alming Reactive Oxygen Atoms Alo a Single Crystal Surface, Journal of Chemical Physics, Vol. 112, No. 5 (2000)
	119	TSAI et al., Theoretical Modeling of Nonequilibrium Optical Phonons and Electron Energy Relaxation in GaN, Journal of Applied Physics, Vol. 85, No. 3 (1999)
	120	WEBER et al., Carrier Capture Processes In GaAs-AlGaAs Quantum Wells Due to Emission of Conflend Phonons, Appl. Phys. Lett. 63 (22) (1993)
	121	WINTTERLIN et al., Atomic and Macroscopic Reaction Rates of a Surface-Catalyz Reaction, Science, Vol. 278 (1997)
	122	YEO et al., Calorimetric HEats for CO and Oxygen Adsorptin and for the Catalytic CO Oxidation Reaction on Pt{111}, J. Chem. Phys. 106 (1) (1997)

Examiner	Date	
Signature	Considered	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Appilcant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)
Approved for use through 07/31/2006, OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Unkler the Paperwork Reduction Act of 1895, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Co.	mplete if Known	
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	

		OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS	
Examiner Initials	Cite No. 1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), cublisher, city and/or country where published	
	123	WITTE et al., Low Frquency Vibrational Modes of Adsorbates, Surface Science, N 1362 (2002)	
	124	VALDEN et al., Onset of Catalytic Activity of Gold Clusters on Titania with The Appearance of Nonmetallic Properties, Science, Vol. 281 (1998)	
	{	XU et al., Electrical Generation of Terahertz Electromagnetic Pulses by Hot-Electrin Quantum Wells, Superlattices and Microstructures, Vol. 22, No. 1 (1997)	ı
	126	WANKE et al., Injectoriess Quantum-Cascade Lasers, Applied Physics Letters, Vo. 78, No. 25 (2001)	1
	127	ZHDANOV, Vladimir P., Nm-Sized Metal Particles on a Semiconductor Surface, Schottky Model, etc., Surface Science, SUSC 2931 (2002)	İ
	128	YEO et al., Calorimetric Investigation of NO and O adsorptin on Pd(100) and the Influence of Preadsorbed Carbon, J. Chem. Phys. 106 (5) (1997)	
	129	ZAMBELLI et al., Complex Pathways in Dissociative Adsorption of Oxygen on Platinum, Nature, Vol. 390 (1997)	Ī
·	130	ZHDANOV et al., Substrate-Mediated Photoinduced Chemical Reactions on Ultrat Metal Films, Surface Science 432 (1999)	h
·	131	ALTUKHOV et al., Towards Si1-xGex Quantum-well Resonant-State Terahertz Laser, Applied Physics Letters, Vol. 79, No. 24 (2001)	
	132	FRIEDMAN et al., SiGe/Si THz Laser Based on Transitions Between Inverted Mas Light-Hole and Heavy-Hole Subbands, Applied Physics Letters, Vol. 78, No. 4 (200	S
·	133	HARRISON et al., The Carrier Dynamics of Terhertz Intersubband Lasers, Some Publishing Company (1999)	-

		_
Examiner	Date	
Silgnature	Considered	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Substitute for form 1449/PTO

Sheet

PTO/SB/08A (08-03)
Approved for use through 07/31/2008. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE

STATEMENT BY APPLICANT (Use as many sheets as necessary)

of

Complete If Known **Application Number** 09/682,363 Filing Date 8/24/2001 First Named Inventor Anthony C. Zuppero Art Unit 1753 Examiner Name Alan D. Diamond 22122878-6 Attorney Docket Number

Examiner	Cke	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the	Т
trátials	No.	tiem (book, magazine, journal, seriat, symposium, catalog, etc.), date, page(s), volume-issue	l
	134	HARRISON et al., The Carrier Dynamics of Far-Infared Intersubband Lasers and	t
		Tunable Emitters, www.ee.leeds.ac.uk/homes/ph/	
	135	HARRISON et al., Theoretical Studies of Subband Carrier Lifetimes in an Optically	†
		Pumped Three-Level Terhertz Laser, Superlattices and Microstructures, Vol. 23, N 2-(1998)	þ
		HARRISON et al., Room Temperature Populatin Inversion in SiGe TASER Design	6
	137	HARRISON et al., Population-Invension and Gain Estimates for a Semiconductor TASER,	-
· · · · · · · · · · · · · · · · · · ·	138	SUN et at., Phonon Pumped SiGe/Si Interminiband Terahertz Laser	-
	139	SOREF et al., Terahertz Gain in a SiGe/Si Quantum Staircase Utlizing the Heavy-Hole Inverted Effective Mass, Applied Physics Letters, vol. 79, No. 22 (200)
	140	SUN et al., Intersubband Lasing Lifetimes of SiGe/Si and Ga As/AlGaAs Multiple Quantum Well Structures, Appl. Phys. Letter 66 (25) (1995)	-
	141	SUN et al., Phonon-Pumped Terhertz Gain in n-Type GaAs/AlGaAs Superlattices, Applied Physics Letters, Vol. 78, No. 22 (2001)	-
	142	ALBANO et al., Adsorption-Kinetics of Hot Dimers, SciSearch Databaseof the Institute for Scientific Information (1999)	
<u> </u>	143	CASASSA et al., Time-Resolved Measurements of Vibrational Relaxatin of Molecules on surfaces: Hydroxyl Groups on Silica Surfaces, Journal of Vacuum Science & Technology A: Vacuum, Surfaces, and Films, Vol. 3, Issue 3 (1985)	
	144	CAVANAGH et al., Vibrational Relaxation of Adsorbed Molecules: Comparison wit Relaxation Rates of Model Compunds, Journal of Vacuum Science & Technology Vacuum, Surfaces and Films, Vol. 5, Issue 4 (1987)	2

Examiner	Date
Signature	Considered

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, V/ashington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)

Approved for use through 07/31/2008, OMB 0851-0031 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Bubstitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Complete If Known		
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	

	T	OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	_
Examiner Initials	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	
	145	HYH et al., Methanol Oxidation of Palladium Compared to Rhodium at Ambient Pressures as Probed by Surface-Enhanced Raman and Mass Spectroscopies, Journal of Catalysis, Vol. 174 (2) (1998)	
	146	GUMHALTER et al., Effect of Electronic Relaxation on Covalent Adsorption React Rates, Physical Review B, Vol. 30, Issue 6 (1984)	t
	147	NOLAN et al., Surface Science, Direct Verification of a High-Translational-Energy Molecular Precursor to Oxygen Dissociation on Pd(111), Surface Science, Vol. 41	- J:
		PHIHAL et al., Role of Intra-Adsorbate Coulomb Correlations in Energy Transfer a Metal Surfaces, Physical Review B, Vol. 58, Issue 4 (1998)	
	149	TULLY et al., Electronic and Phonon Mechanisms of Vibrational Relaxation: CO or Cu(100), J. Vac. Sci. Technol. A 11(4) (1993)	Ī
		DiMATTEO et al., Enhanced Photogeneration of Carriers in a Semocnductor Via Coupling Across a Nonisothermal Nonascale Vacuum Gap, Applied Physics Letter Vol. 79, Issue 12 (2001)	ı
	151	TRIPA et al., Surface-Aligned Photochemistry: Aiming Reactive Oxygen Atoms Alo a Single Crystal Surface, The Journal of Chemical Physics, Vol. 112, Issue 5 (2000)	
	152	YATES et al., Special Adsorption and Reaction Effects at Step Defect Sites on Platinum Single Crystal Surfaces (2000)	
	153	DEKORSY et al, Coherent Acoustic Phons in Semiconductor Superlattics, phys. stat. sp;. (b) 215, p 425-430 (1999)	
			ľ
·	*********		-

Examiner	7	
Examiner	Date	·
Skinature		
OVINGIOLE 1	Considered	

^{*}EXAMINER: initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)

Approved for use through 07/31/2008. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Uniter the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of Information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete If Known		
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	

			U.S. PATE	NT DOCUMENTS	
Examiner Initials		_Document Number Number-Kind Code®(#known		Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		us. 6,119,651	09-19-2000	Anderson	rigaros rappour
	2	US- 6,114,620	09-055-2000	Zuppero et al.	
	3	us. 5,408,967	04-25-1995	Foster	
·	4	us. 5,293,857	03-15-1994	Meyer	
	5	us2002/0017827	02-14-2002	Zuppero et al.	· · · · · · · · · · · · · · · · · · ·
		us-2002/0121088	9-5-2002	Zuppero et al.	
		US-			
		US-			
		U8-			
		US-			
		US-			
		US-			
	ļ.,,	US-			
		US-		·	
	l	U8-			1

FOREIGN PATENT DOCUMENTS						
Examiner Initials		Foreign Patent Document COUNTY Code 2 - Number 4 - Mnd Code 2 (Francis)	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	70
						_

		areas and a second of the seco
Examiner	Date	:
Signature	Considered	

English taliguage Trainstation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case.

Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in

confirmance with MPEP 609. Draw line through citation if not in conformance with MPEP 609. Draw line through citation if not in confirmance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional).

² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.14.

³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3).

⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.

⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST, 16 if possible.

⁶ Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08A (08-03)
Approved for use through 07/31/2006, OMB 0651-0031
U.S. Patent and Tredemark Office; U.S. DEPARTMENT OF COMMERCE Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it conteins a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known Application Number 09/682,363 Filing Date 8/24/2001 First Named Inventor Anthony C. Zuppero Art Unit 1753 **Examiner Name** Alan D. Diamond Attorney Docket Number 22122878-6

			U.S. PATI	ENT DOCUMENTS	
Examiner Initials		Document Number Number-Kind Code ² (if known	Publication Date	Name of Patantee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant
	1	US- 4,590,307	05-20-1986	CAPASSO, et al.	Figures Appear
	2	US- 4,686,350	08-11-1987	CAPASSO, et al.	
	3	US- 4,849,799	07-18-1989	CAPASSO, et al.	
	4	US- 5,311,009	05-10-1994	CAPASSO, et al.	
	5	us- 6,084,173	07-04-2000	DIMATTEO	
	6	US- 6,232,546	05-15-2001	DIMATTEO, et al.	
		US-			
		US-			
		US-			
		us-	· · · · · · · · · · · · · · · · · · ·		
		U8-			
		US-			
		US-			
		US-			
·		U8-	 · · · ·		
		US-	_		
	L	US-			
		US-		· ····	
	<u> </u>	US-		ļ.,	
	<u> </u>	US-			

	FOREIGN PATENT DOCUMENTS							
Examiner Initials	Cita No.1	Foreign Patent Document County Code 3 - Number 4 - Kind Code 3 (F Annum)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	76		
	}	- Control of the Cont						

	وسيسم فيناه وبراه والمساور والمراجع والم والمراجع والمراجع والمراجع والمراجع والمراجع والمراجع والمراج		
Examiner Skynature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not cliation is in conformance with MPEP 809. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 801.04. ³ Enter Office that issued the document, by the two-letter code (WiPO Standard ST.3). ⁴ For Japanese patent documents, the indivision of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

English sangulage Transaction is students. The form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Tracemark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Inder the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Substitute for form 1449/PTO

(Use as many sheets as necessary)

	Complete if Known		
	Application Number	09/682,363	
	Filing Date	8/24/2001	
	First Named Inventor	Anthony C. Zuppero	
	Art Unit	1753	
	Examiner Name	Alan D. Diamond	
_	Attorney Docket Number	22122878 G	

I		22122070-0	
	,	OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examiner friti als	CRe No.1	include name of the author (in CAPITAL LETTERS), the of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue mumber(s), publisher, city end/or country where published.	72
	7	AUERBACH, Daniel J.; "Hitting the Surface-Softly"; Science, 294, (2001), pp. 2488-2489	
	8	BONDZIB, V. A., et al.;; "Oxygen adsorption gold particles TiO2(110)"; J. Vac. Sci. Tech. A., (1999) 17, pp. 1717 and figure 3	
	9	BOULTER, James; "Laboratory Measurement of OH "; http://pearl1.lanl.gov/wsa2002/WSA2002talks.pdf	
	10	CHAN H.Y.H., et al.; "Methanol Oxidation On Palladium Compared To Rhodium; J. Catalysis v. 174(#2) pp. 191-200 (1998) (abstract and figure 1 only)	
	11	CHIANG, TC.; "Photoemission studies of quantum well states in thin films; Surf. Sci. Rpts.39 (2000) pp 181-235	
	12	CHUBB, D. L., et al; "Semiconductor Silicon as a Selective Emitter"; http://www.thermopv.org/TPV5-2-05-Chubb.pdf (abstract only)	
	13	CORCELLI, S. A., et al.; "Vibrational energy pooling in CO on NaCl(100) "; J. Chem. Phys.(2002) 116, pp. 8079-8092	
	14	DANESE, A., et al.; "Influence of the substrate electronic structure on metallic quantum well"; Prog. Surf. Sci., 67, (2001), pp 249-258	
	15	DAVIS, J. B., et al.; "Kinetics and dynamics of the dissociative chemisorption of oxygen on Ir(111)"; J. Chem. Phys. 107 (3), (1997), pp 943-952	
····			

Examiner	Date
Signature	Considered

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

^{*}EXAMINEF: Initial if reference considered, whether or not citation is in conformance with MPEP 809. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant'n unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08A (08-03)
Approved for use through 07/31/2008. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Unx er the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number. Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

of

Complete if Known		
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	

2 (1-2) I. Phys.
I. Phys.
gap
air";
Surf. Sci.,
)
р.
592-13595

	The state of the s
Examiner .	Date
Signature	Considered

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 809. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)
Approved for use through 07/31/2006, OMB 0661-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Light the Paperwark Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Complete If Known		
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examilner Inklaia	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T
	25	GER, Adam T., et al.; "The dynamics of O2 adsorption on Pt(533)"; J. Chem. Phys.(2000) 113, pp. 10333-10343	
	26	GERGEN, Brian, et al.; "Chemically Induced Electronic Excitations at Metal Surfaces"; Science,294, (2001) pp. 2521-2523	1
	27	GULIANTS, Elena A, et al.; "A 0.5-µm-thick polycrystalline silicon Schottky"; Appl. Phys. Let., (2002), 80, pp. 1474-1476	\dagger
-	28	GUMHALTER, B., et al.; "Effect of electronic relaxation adsorption reaction rates"; Phys. Rev. B (1984) 30 pp. 3179-3190	\dagger
	29	HALONEN, Lauri, et al.; "Reactivity of vibrationally excited methane on nickel"; J. Chem. Phys. (2001) 115, pp. 5611-5619	\dagger
	30	HASEGAWA, Y., et al.; "Modification of electron standing wave Pd; Surf. Sci., in press, 11 April 2002	\mid
·	31	HENRY, Claude R.; "Catalytic activity nanometer-sized metal clusters"; Applied Surf. Sci., 164, (2000) pp 252-259	-
	32	HESS, S., et al.; "Hot Carrier Relaxation Phonon Scattering in GaN"; http://www.physics.ox.ac.uk/rtaylor/images/hot%20carrier%20poster.pdf	
	33	HO, Wilson; http://www.lassp.comell.edu/lassp_data/wilsonho.html	
			-

Examiner	Date
Signisture	Considered

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is stached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. They will vary depending upon the needs of the individual case. Any office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Palents, Washington, DC 20231.

PTO/SB/08A (08-03)

Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Untier the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO Complete if Known **Application Number** 09/682,363 Filing Date INFORMATION DISCLOSURE 8/24/2001 First Named Inventor Anthony C. Zuppero STATEMENT BY APPLICANT Art Unit 1753 (Use as many aheets as necessary) Examiner Name Alan D. Diamond Attorney Docket Number 22122878-6

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS Examiner Citie Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the			
tollials	Citie No. ¹	mimber(a), publisher, city and/or country where dishlished	
· · · · · · · · · · · · · · · · · · ·	34	HOHLFELD, J, et al.; "Electron and lattice dynamics optical excitation of metals"; Chemical Physics, 251 (2000) pp 237–258	
	35	HONKALA, Karollina, et al.; "Ab initio study of O2 precursor states on the Pd(111)"; J. Chem. Phys. (2001) 115, pp. 2297-2302	
	36	HOU, H.; Y., et al.; "Chemical Interactions of Super-Excited Molecules on Metal Surfaces"; http://www2.chem.ucsb.edu/~wodtke/papers/dan1.pdf	_
	37	HOU, H., et al.; "Direct multiquantum relaxation of highly vibrationally excited NO"; J. Chem. Phys., 110, (1999) pp 10660 - 10663	
	38	HUANG Y., et al.; "Observation of Vibrational Excitation and Deexcitation for NO from Au(111)"; Phys. Rev. Lett., 84, (2000) pp 2985 - 2988	
	39	HUANG, Yuhui, et al.; "Vibrational Promotion of Electron Transfer"; SCIENCE, VOL 290, 6 OCTOBER 2000, pp 111 - 113	-
	40	IBH; "NanoLED overview"; http://www.ibh.co.uk/products/light_sources/nanoled_main.htm	-
	41	IBH; "Red picosecond laser sources"; http://www.ibh.co.uk/products/light_sources/nanoled/heads/red_laser_heads.htm	
	42	IFTIMIA, Ileana, et al.; "Theory scattering of molecules from surface"; Phys. Rev. B (2002) 65, Article 125401	
	_		
İ			

Examiner	Date	
Slonature		
Old actie	Considered	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[†] Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any Office, Wast Ington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents,

PTO/SB/08A (08-03)

Approved for use through 07/31/2008, OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Complete if Known					
Application Number	09/682,363				
Filing Date	8/24/2001				
First Named Inventor	Anthony C. Zuppero				
Art Unit	1753				
Examiner Name	Alan D. Diamond				
Attorney Docket Number	22122878-6				

Cite No. 1	include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the idem (book, magazine, journal, serial, symposium, catalog, etc.), date, page(e), volume-issue number(a), nublisher, city and/or country where nublished.	1
43	ISHIKAWA, Yasuyuki, et al.; "Energetics of H2O dissociation and COads+OHads reaction Pt"; Surf. Sci. preprints SUSC 12830, 27 April 2002	Ī
44	JOHNSON, R. Colin; "Molecular substitutionterahertz switch arrays"; EE Times, (04/10/00, 3:35 p.m. EST) http://www.eet.com/story/OEG20000410S0057	T
45	KAO, Chia-Ling, et al.; "The adsorption molecular carbon dioxide on Pt(111) and Pd(111)"; Surf. Sci., (2001) Article 12570	
46	KATZ, Gil, et al.; "Non-Adiabatic Charge Transfer Process of Oxygen on metal Surfaces"; Surf. Sci. 425(1) (1999) pp. 1-14	T
47	KAWAKAMI, R. K., et al.; "Quantum-well states in copper thin films"; Nature, 398, (1999) pp 132 - 134	
48	KOMEDA, T., et al.; "Lateral Hopping of Molecules Induced by Excitation of Internal Vibration"; Science, 295, (2002) pp 2055-2058	
49	LEWIS, Steven P., et al.; "Continuum Elastic Theory of Adsorbate Vibrational Relaxation"; J. Chem. Phys. 108, 1157 (1998)	T
50	LEWIS, Steven P., et al.; "Substrate-adsorbate coupling in CO-adsorbed copper"; Phys. Rev. Lett. 77, 5241 (1996)	
51	Ll, Shenping, et al.; "Generation of wavelength-tunable single-mode picosecond pulses"; Appl. Phys. Let. 76, (2000) pp 3676 - 3678	
	·	
	43 44 45 46 47 48 49 50	ISHIKAWA, Yasuyuki, et al.; "Energetics of H2O dissociation and COads+OHads reaction Pt"; Surf. Sci. preprints SUSC 12830, 27 April 2002 JOHNSON, R. Colin; "Molecular substitutionterahertz switch arrays"; EE Times, (04/10/00, 3:35 p.m. EST) http://www.eet.com/story/OEG20000410S0057 KAO, Chia-Ling, et al.; "The adsorption molecular carbon dioxide on Pt(111) and Pd(111)"; Surf. Sci., (2001) Article 12570 KATZ, Gil, et al.; "Non-Adiabatic Charge Transfer Process of Oxygen on metal Surfaces"; Surf. Sci. 425(1) (1999) pp. 1-14 KAWAKAMI, R. K., et al.; "Quantum-well states in copper thin films"; Nature, 398, (1999) pp. 132 - 134 KOMEDA, T., et al.; "Lateral Hopping of Molecules Induced by Excitation of Internal Vibration"; Science, 295, (2002) pp 2055-2058 LEWIS, Steven P., et al.; "Continuum Elastic Theory of Adsorbate Vibrational Relaxation"; J. Chem. Phys. 108, 1157 (1998) LEWIS, Steven P., et al.; "Substrate-adsorbate coupling in CO-adsorbed copper"; Phys. Rev. Lett. 77, 5241 (1996)

Examiner .	Date	•
Signature	Considered	
	T MODINING DATE	

^{*}EXAMINEII: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant'ii unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Tradement Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)
Approved for use through 07/31/2008. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Complete if Known					
Application Number	09/682,363				
Filing Date	8/24/2001				
First Named Inventor	Anthony C. Zuppero				
Art Unit	1753				
Examiner Name	Alan D. Diamond				
Attomey Docket Number	22122878-6				

Examiner Initis is	Cite No.1	include name of the author (in CAPITAL LETTERS), tills of the article (when appropriate), titls of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), nublisher, city and/or country where nublisher.	T
	52	MITSUI, T., et al.; "Coadsorption and interactions of O and H on Pd(111)"; Surf. Sci., Article 12767, (2002)	T
	53	MOULA, Md. Golam, et al.; "Velocity distribution of desorbing CO2 in CO oxidation on Pd(110)"; Applied Surf. Sci., 169-170, pp 268-272 (2001)	Ť
	54	MULET, Jean-Philippe, et al.; "Nanoscale radiative heat transfer between a small particle"; Appl. Phys. Let., 78, (2001) p 2931	\dagger
	55	NIENHAUS, H, et al.; "Direct detection of electron-hole pairs generated by chemical reactions on metal surfaces"; Surf. Sci. 445 (2000) pp 335-342	T
	56	NIENHAUS, H.; "Electronic excitations by chemical reactions on metal surfaces"; Surf. Sci. Rpts. 45 (2002) pp 1 - 78	
	57	NIENHAUS, H., et al.; "Selective H atom sensors using ultrathin Ag/Si Schottky diodes"; Appl. Phys. Let. (1999) 74, pp. 4046-4048	T
	58	NIENHAUS, Hermann; "Electron-hole pair creation by reactions at metal surfaces"; APS, March 20-26, 1999, Atlanta, GA, Session SC33 [SC33.01]	\dagger
	59	NIENHAUS, H, et al.; "Electron-Hole Pair Creation at Ag and Cu of Atomic Hydrogen and Deuterium"; Phys. Rev. Lett., 82, (1999) pp. 446-449	
	60	NOLAN P. D., et al.; "Direct verification of precursor to oxygen dissociation on Pd(111)"; Surf. Sci. v. 419(#1) pp. L107-L113, (1998)	
		·	
		`	

ldered

^{*}EXAMINET: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments in the amount of time you are required to complete this form should be sent to the Chief information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete If Known **Application Number** 09/682,363 Filing Date 8/24/2001 First Named Inventor Anthony C. Zuppero Art Unit 1753 Examiner Name Alan D. Diamond Attorney Docket Number 22122878-6

	7	OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS	
Examiner initials	CNe No. ¹	thouse name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), number(s), number city and/or country where number(s).	
	61	NOLAN, P. D., et al.; "Molecularly chemisorbed intermediates to oxygen adsorption on Pt"; J. Chem. Phys. 111, (1999), pp 3696 - 3704	
	62	NOLAN, P. D., et al.; "Translational Precursors to Oxygen Adsorption on Pt(111)"; Phys. Rev. Lett., 81, (1998) pp 3179 - 3182	1
	63	OGAWA, S., et al.; "Optical and Femtosecond Dynamics in Ag/Fe(100) Quantum Wells"; Phys. Rev. Lett. 88, 116801 (2002)	1
	64	PAGGEL, J. J., et al.; "Quantum-Well States as Fabry-Pérot Modes in a"; Science, 283, (1999), pp 1709 - 1711	l
	65	PAGGEL, J. J., et al.; "Quasiparticle Lifetime Ag/Fe(100) Quantum Wells"; Phys. Rev. Lett. (1998) 81, pp. 5632-5635	f
	66	PAGGEL, J.J., et al.; "Quantum well photoemission from atomically uniform Ag films"; Applied Surf. Sci., 162 –163, (2000), pp 78 –85	ł
	67	RETTNER, C. T., et al; "Dynamics chemisorption of O2 on Pt(111) chemisorbed precursor"; J. Chem. Phys. (1991) 94, pp. 1626-1635 (abstract only)	-
	68	RINNEMO, Mats; "Catalytic Ignition and Kinetic Phase Transitions"; 1996; http://www2.lib.chalmers.se/cth/diss/doc/9596/RinnemoMats.html	
	69	ROBERTSON, A. J. B.; "Catalysis of Gas Reactions by Metals"; Logos Press Limited; 1970; LC # 70-80936; pp. 1-5, 10, 41; Great Britain, Adlard & son Ltd	-
	_		
[

Phoneline	
Examiner	Date
Clematerna	nare
Slangture	Considered
	CONSIDERATION

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English tanguage Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)
Approved for use through 07/31/2008. OMB 0551-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Un ter the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB or

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Complete If Known			
Application Number	09/682,363		
Filing Date	8/24/2001		
First Named Inventor	Anthony C. Zuppero		
Art Unit	1753		
Examiner Name	Alan D. Diamond		
Attorney Docket Number	22122878-6		

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examiner Initi de	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, sympostum, catalog, etc.), date, page(s), volume-issue number(s), nublisher, city and/or country where outlished	T ²
	70	SCHEWE, P., et al.; "CO2 Production at the Single-Molecule Level"; http://www.aip.org/enews/physnews/2001/split/561-1.html	
	71	SHENG, H., et al.; "Schottky diode with Ag on (110) epitaxial ZnO film"; Appl. Phys. Let. (2002) 80, pp. 2132-2134	
	72	SMIT, G. D. J., et al.; "Enhanced tunneling across nanometer-scale metal-semiconductor interfaces"; Appl. Phys. Let.(2002) 80, pp. 2568-2570	
	73	SNOW, B. S., et al.; "Ultrathin PtSi layers patterned by scanned probe lithography"; Appl. Phys. Let. (2001) 79, pp. 1109-1111	
	74	STIPE, B. C., et al.; "Atomistic studies of O2 dissociation on Pt(111) induced by photons"; J. Chem. Phys., (1997) 107 pp. 6443-6447	
	75	SUN, CK., et al.; "Femtosecond studies of carrier dynamics in InGaN"; Appl. Phys. Let. (1997) 70 pp. 2004-2006	
	76	SVENSSON, K., et al.; "Dipole Active Vibrational Motion in the Physisorption Well"; Phys. Rev. Lett., 78, (1997) pp 2016-2019	
	77	TARVER, Craig M.; "Non-Equilibrium Chemical Kinetic Explosive Reactive Flows"; Fall 1999 IMA Workshop: High-Speed Combustion in Gaseous and Condensed-Phase	
	78	TAYLOR, R.A., et al.; "Strong Electron-LO Phonon Scattering and Hot Carrier Relaxation in GaN"; http://www.physics.ox.ac.uk/rtaylor/images/ha249kw3.pdf	

والمستحدد والمراجع والمارات		
Examiner	Date	
Signature	Considered	•

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 809. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Ho is Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Tradsmark Office, Wai hington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Approved for use through 07/31/2006, OMB 06-51-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COM MERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

Complete if Known

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Complete it Known		
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examiner Inti its	Cite No. ¹	twolude name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), nublisher, city and/or country where number(s), nublisher, city and/or country where number(s).	T
	79	TEODORESCU, C.M., et al.; "Structure of Fe layers grown on InAs"; Appl. Surf. Sci., 166, (2000) pp 137-142	T
	80	TIUSAN, C., et al.; "Quantum coherent transport versus diode-like effect in"; Appl. Phys. Let. 79, (2001) pp 4231-4233	\dagger
	81	TRIPA, C. Emil, et al.; "Surface-aligned photochemistry: Aiming reactive oxygen atoms"; J. Chem. Phys., (2000) 112 pp. 2463-2469	t
	82	TRIPA, C. Emil, et al.; "Surface-aligned reaction of photogenerated oxygen atoms with"; Nature 398, pp 591 - 593 (1999)	\dagger
	83	TRIPA, C. Emil; "Special Adsorption and Reaction Effects at Step Defect Sites on Platinum"; http://www.chem.pitt.edu/thesis.html#tripa (abstract only)	
	84	VOLKENING, S., et al.; "CO oxidation on Pt(111)—Scanning tunneling microscopy experiments"; J. Chem. Phys. (2001) 114, pp. 6382-6395	l
	85	WATSON, D.T.P., et al.; "Isothermal and temperature-programmed oxidation of CH over Pt"; Surf. Sci. preprint, year 2001	-
	86 .	WATSON, D.T.P., et al.; "Surface products of the dissociative adsorption of methane on Pt"; Surf. Sci. preprint, c. October 2001	
			-
	- 1		

Examiner	Date
Signature	
Stell archa	Considered

^{*}EXAMINER Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden How Statement: This form is estimated to take 2.0 hours to complete. Time will very depending upon the needs of the individual case. Any Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of Information unless it Contains a valid OMB control number.

Complete if Known Substitute for form 1449/PTO Application Number 09/682,363 Filing Date INFORMATION DISCLOSURE 8/24/2001 First Named Inventor Anthony C. Zuppero STATEMENT BY APPLICANT Art Unit 1753 (Use as many sheets as necessary) **Examiner Name** Alan D. Diamond 22122878-6 Attorney Docket Number

		include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the
Examiner Initiats	Cite No.1	item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s) outlisher city and/or country where published
	87	WILKE, Steffen, et al.; "Theoretical investigation of water formation on Rh and Pt Surfaces"; J. Chem. Phys., 112, (2000) PP 9986 - 9995
	88	WINTTERLIN, J, et al; "AtomicReaction Rates Surface-Catalyzed"; Science, 278, (1997) pp. 1931 - 1934
	89	WINITERLIN, J, R., et al.; "Existence of a "Hot" Atom Mechanism for the Dissociation of O2 on Pt(111)"; Phys. Rev. Lett., 77, (1996), pp 123 - 126
	90	ZAMBELLI, T., et al.; "Complex pathways in dissociative adsorption of oxygen on platinum"; Nature 390, pp 495 - 497 (1997)
	91	ZHDANOV, V.P., et al.; "Substrate-mediated photoinduced chemical reactions on ultrathin metal films"; Surf. Sci., V. 432 (#3) pp L599-L603, (1999)
	92	ZHDANOV, Vladimir P.; "Nm-sized metal particles on a semiconductor surface, Schottky"; Surf. Sci. PROOF SUSC 2931, 20 April 2002
	93	ZHUKOV, V. P., et al.; "Lifetimes of quasiparticle excitations in 4d transition metals"; Phys. Rev. B (2002) 65, Article 115116
		·

Examiner	Date
Signature	Considered

^{*}EXAMINET: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered, include copy of this form with next communication to applicant.

^{.1} Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Horr-Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments in the amount of time you are required to complete this form should be sent to the Chief information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Approved for use through 07/31/2006. OMB 0851-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of Information unless it contains a valid OMB control number.

Substitute for form 1449/PTO	. Co	Complete If Known			
	Application Number	09/682,363			
INFORMATION DISCLOSURE	Filing Date	8/24/2001			
STATEMENT BY APPLICANT		Anthony C. Zuppero			
	1.24.0	1753			
(Use as many sheets as necessary)	Examiner Name	Alan D. Diamond			
cet of	Attorney Docket Number	22122878-6			

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examiner Initials	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the kem (book, magazine, journal, serial, symposium, catalog, etc.), data, page(s), volume-issue number(e), publisher, city and/or country where published.	T²
	'	DANIEL J. AUERBACH, Hitting the Surface Softly, www.sciencemag.org, Vol 294 Science, December 21, 2001, pp. 2488-2489.	\dagger
	2	M.D CUMMINGS AND A.Y ELE ZZABI, Ultarfast impulsive excitation of coherent longitudal acoustic phonon oscillations in highly photoexcited InSb, 2001 American Institute of Physics, Volume 79, Number 6, August 6, 2001.	-
	3	J.W. GADZUK, Resonance-Assisted Hot Electron Femotochemistry at Surfaces, National Institute of Standards and Technology, Gathersburg, Maryland 20899, Physical Review Letters, Volume 76, Number 22, May 27, 1996.	╁
	4	BRIAN GERGEN, HERMAN NIENHAUS, W., HENRY WEINBERG, ERIC W. McFARLAND, Chemically Induced Electronic Excitations at Metal Surfaces, www.sciencemag.org, Vol 294, December 21, 2001, Pgs 2521-2523.	
·	5	H.HOU, Y.HUANG, S.J. GUILDING, C.T RETTNER, D.J. AUERBACH, A.M. WOODTKE, Enhanced Reactivity of Highly Vibrationally Excited Molecules on Metal Surfaces, www.sciencemag.org, Vol 284, June 4, 1999, pgs. 1647-1650	
	6	Y.HUANG,C.T RETTNER, D.J. AUERBACH, A.M. WOODTKE, Vibrational Promotion of Electron Transfer, sciencemag.org, Vol 290, October 6, 2000, pgs.111-114.	\vdash
	7	STEVEN p. IEWIS, ANDREW M. RAPPE, Controlling adsobate vibrational lifetimes using superlattices, 2001 The American Physical Society, Physical Review B, Bolume 63, 085402.	
	8	HENRY WEINBERG, ERIC W. McFARLAND, A. MAJUNDAR, B. GERGEN, HERMAN NIENHAUS, W., H.S BERGH, Electron-Hole Pair Creation at Af and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium, 1999 The American Physical Society, Physical Review Letters, Volume 82,	-
	9	HENRY WEINBERG, ERIC W. McFARLAND, A. MAJUNDAR, B. GERGEN, HERMAN NIENHAUS, W., H.S BERGH, Direct detection of electron-hole pairs generated by vhemical reactions on metal surfaces, 2000 Elsevier Science B.V., Surface Science, pgs. 335-342.	
	10	XIAOFENG, FAN, GEHONG, CHRIS LABOUNTY, AND BOWERS, JOHN E., CROKE, EDWARD, AHN, CHANNING C., HUXTABLE, SCOTT, MAJUMDAR, ARUN, SHAKOURI, ALI; SiGec/Si superlattice microcoolers; Applied Phuscis Letters, Volume 78, Number 11, 12 March 2001, Pg: 1580-1582.	
	11	FRIEDMAN, L., SUN G., SOREF, R.A.; SiGec/Si THz laser based on transitions between inverted mass light-hole and heavy-hole subbnads; Applied Physics Lettersl, Volume 78, Number 4, 22 January 2001; Pg: 401-403.	

Examiner		
	Date	
Signature	Date	
Olginaturis	Considered	

*EXAMINER: Initial if reference considered, whether or not oltation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, OC 20231.

⁵ Unique citation designation number. ² Applicant is to place a check mark here if English tanguage Translation is attached.

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known		
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	

Examiner init als	Cits No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the litem (book, magazine, journal, serial, symposhum, catalog, etc.), date, page(s), volume-issue number(s), nublisher, city and/or country where published.	1
	12	HARRISON, P., SOREF, R.A.; Population-inversion and gain estimates for semiconductor TASER.	ľ
	13	HARRISON, P., SOREF, R.A.; Room temperature population inversion in SiGe TASER design.	
	14	HOHLFELD, J., WELLERSHOFF, SS, J., GUDDE, U., CONRAD, V., JAHNKE, E., MATTIAS; Electron and lattice dynamics following optical excitation of metals; Chemical	
		Physics 251(2000), Pg: 237-258.	
	15	HOU, H., HUANG, Y., GOULDING, S.J., RETTER., C.T., AUERBACH, D.J., WODRKE, A.M.; Dierect multiquantum relaxation of highly vibrationally excited NO in collisions with O/Cu(111);	-
and the state of t	16	JONGMA, RIENK T., WODTKE, ALEC M.; Fast multiquantum vibrational relaxation of highly	
		vibrationally excited O2; Journal of Chemical Physics; Volume 111, Number 24; 22 December 1999; Pgs. 10957-10963.	
	17	KAWAKAMI, R.K., ROTENBERG, E., CHOI, HYUK J., ESCORCIA-APARICIO, ERNESTO J., BOWEN, M.O., WOLFE, J.H., ARENHOLZ, E., ZHANG, Z.D., SMITH, N.V., QIU, Z.Q.,	
		Quantum-well states in copper thin films; Letters to nature; Volume 398; 11 March 1999; www.nature.com.	
	18	MD. GOLAM MOULA, SURGIO WAKO, GENGYU CAO, IVAN KOBAL, YUICHI OHNO, TATSUO MATSUSHIMA; Velocity distribution of desorbin CO2 in CO oxidation ion Pd(110) under steady-state conditions; applied surface science; 169-170 (2001); Pgs: 268-272.	
		JEAN-PHILIPPE MULET, KARL JOULAIN, REMI CARMINATI, AND JEAN-JACQUES GREFFET; Nanoscale radiative heat transfer between a small particle and a plane surface; Applied Physics Letters; Volume 78, Number 19; 7 May 2001; Pgs: 2931-2933.	

Examiner	Date	
Claustina		
Signature	Considered	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

f Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Ho # Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, War-hington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Unjer the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known				
Application Number	09/682,363			
Filing Date	8/24/2001			
First Named Inventor	Anthony C. Zuppero			
Art Unit	1753			
Examiner Name	Alan D. Diamond			
Altorney Docket Number	22122878-6			

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Exeminer Initials	Cite No. 1	include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the litem (book, magazins, journal, serial, symposium, catalog, etc.), date, page(s), vokume-issue number(s), nublisher, city and/or country where nuthilished	T
····	20	H. NIEHAOUS et al., " Direct detetion of electron-hole pairs generated by chemical reaction on metal surfaces", Surface Science 445 (2000), Pages 3350342.	1
	21	H. NIEHAUS et al., "Selective H atom sensores using ultrathin Ag/Si Schottky diodes", Applied Physics Letters, Volume 74, Number 26, 28 June 1999, Pages 4046-4048.	1
	22	J.J PAGGEL et al., "Quantum-Well States as a Fabry-Perot Modes in a Thin-Film Electron Interferometer", www.Sciencemag.org Science Vol 284 12 March 1999, Pages 1709-1711.	1
	23	J.J PAGGEL et al., * Quasiparticle Lifetime in Macroscopically Uniform Ag/Fe(100) Quantum	1
		Wells", Physical Review Letters, Volume 81, Number 25, 21 December 1998, Pages 5632-5635.	T
	24	J.J PAGGEL et al., " Quantum well photoemission from atomically uniform Ag films: determination of electronic band structure and quasi particle lifetime in Ag(100), Aplied Surface	\dagger
		Science 162-163(2000), Pages 78-85.	-
	25	N.PONTIUS et al.," Size-dependent hot-electron dynamics in small Pdn-cluster", Journal of Chemical Physics, Vlolume 115, Number 22, 8 December 2001, Pages 10479-10483.	-
	26	R.A SOREL et al., "Terahertz gain in a SiGe/Si quantum staircase utilizing the heavy-hole inverted effective mass, Applied Phusics Letters, Volume 79, Number 22, 26 November 2001, Pages	
		3639-3641.	-
	_		
		·	
		·	

4				•
Examiner	1			_
		Date	i	
Signature		I Date	i	
Signature	<u></u>	Considered	i	
		Louisideredi	<u> </u>	

^{*}EXAMINEF: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Sheat

PTO/SB/08A (08-03)

Approved for use through 07/31/2008. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless a valid OMB control number. Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known			
Application Number	09/682,363		
Filing Date	8/24/2001		
First Named Inventor	Anthony C. Zuppero		
Art Unit	1753		
Examiner Name	Alan D. Diamond		
Attorney Docket Number	22122878-6		

Examiner Initials	r Cite No. 1 Include name of the author (in CAPITAL LETTERS), the of the article (when appropriate), tille of the Item (book, magazine, journal, serial, sympostum, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.			
	27	G. SUN et al., "Phonon-pumped terahertz gain in n-type GaAs/AlGaAs Superlattices, Applied Physics Letters, Volume 78, Number 22, Pages 3520-3522.	T	
	28	V. P. ZHDANOV et al., "Substrate-mediated photoinduced chemical reactions on ultrathin metal films", Surface Sciene 432 (1999), Pages L599-L603.	1	
	29	H. PARK et al., "Nanomechanical oscillations in a single-C60 transistor", Letters to nature, Volume 407, September 7, 2000, www.nature.com, Pages 57-60.	†	
	30	G. SUN et al., "Phonon Pumped SiGe/Si Interminiband Terahertz Laser", Pages 1-11.	\dagger	
	31	G. SUN et al., "Phonon-pumped terahertz gain in n-type GaAs/Al GaAs superlattices", Applled Physics Letters, Volume 78, Number 22, 28 May 2001, Pages 3520-3522.	†	
# 444 PART - 10 PART - 201	32	K. SVENSSON et al., "Dipole Active Vibrational Motion in the Physisorption Well", Physical Review Letters, Volume 78, Number 10, 10 March 1997, Pages 2016-2019.	\dagger	
t the first days and an executive part	33	R. D. VALE et al., "The Way Things Move: Looking Under the Hood of Molecular Motor		
		Proteins", Science, Volume 288, 7 April 2000, www.sciencemag.org, Pages 88-95.	-	
	34	W. XU et al., "Electrical generation of terahertz electromagnetic pulses by hot-electrons in quantum wells, Superlattices and Microstructures, Volume 22, November 1,1997, Pages 25-29.	lacksquare	
	35	G. SUN, R.A. Soref, J.B. KHURGIN; "Phonon Pumped SiGe/Si Interminiband Terahertz Laser"	-	

Ext:miner	 Date	**********
Sla nature	Considered	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments in the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Substitute for form 1449PTO

PTO/SB/08A (08-03)

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449PTO

Complete # Known.

Substitute for form 1449/PTO

Complete If Known

Application Number 09/682,363

INFORMATION DISCLOSURE

Filing Date 8/24/2001

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Application Number 09/682,363

Filing Date 8/24/2001

First Named Inventor Anthony C. Zuppero
Art Unit 1753

Examiner Name Alan D. Diamond

Attorney Docket Number 22122878-6

Ext miner Initials	Cite No. 1	OTHER PRIOR ART — NON PATENT LITERATURE DOCUMENTS Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, sorial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T
	36	P. ARMOUR et al., "Hot-electron transmission through metal-metal interfaces: a study of Au/Fe/Au trilayers in GaAs substrates", Applied Surface Science 123/124 (1998), Pages 412-417.	T
	37	C.D. BEZANT et al., "Intersubband relaxation lifetimes in p-GaAs/AlGaAs quantum wells below the LO-phonon energy measured in a free electron laser experiment", Vacuum Solutions	\dagger
		Online, Semicond. Sci. Technol. 14 No. 8 (August 1999) L25-L28, PII: S0268-1242(99)03669-X.	t
	38	L. BURGI et al., "Confinement of Surface State Electrons in Fabry-Perot Resonators", Physical	\mid
		Review Letters, Volume 81, Number 24, 14 December 1998, Pages 5370-5373.	ŀ
	39	I. CAMPILLO et al., "Inelastic lifetimes of hot electrons in real metals", Physical Review Letters, Volume 83, Number 11, September 13, 1999, Pages 2230-2233.	-
	40	CHIANG, TC., "Photoemission studies of quantum well states in thin films", Surface Science Reports 39 (2000) pp 181-235	
	41		
7		DE PAULA, A. et al, "Carrier capture processes in semiconductor superlattices due to emission of confined phonons", J. Appl. Phys. 77 (12), 1995 pp 6306-6312.	
	-		
	- 1		

Examiner		Date	
Signature	·	Date	
Chan have I		Considered	
ZAMINICO, Labrari		CONSIGNIE	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw fine through citation if not in conformance and not considered, include copy of this form with next communication to applicant.

1 Applicant's inique citation designation number (optional). Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents,

Approved for use through 07/31/2006, OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE Uniter the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Co	emplete if Known
Application Number	09/682,363
Filing Date	8/24/2001
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-6

Examiner initials*	Cite No.1	Document Number	Publication Date	T DOCUMENTS	
INCORP.	No.	Number-Kind Code ^{2 (7 Incom)}	MM-DD-YYYY	Name of Palentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant
	A	US-4045359 -	08-1977	Fletcher et al.	Figures Appear
	_ в	US-4407705	10-1983	Garscadden et al.	
	- c	US-5932885	08-1999	DeBellis et al.	
	D	US-6114620	09-2000	Zuppero et al.	
	E	US-6218608-B1	04-2001	Zuppero et al.	
	- F	US-6222116-B1	04-2001	Zuppero et al.	
	G	LS-6268560-B1	07-2001	Zuppero et al.	
	н	US-2001/0018923-A1	09-2001	Zuppero et al.	
		US-6327859-B1	12-2001	Zuppero et al.	
		US-2002/0017827-A1	02-2002	Zuppero et al.	
	_к	US-2002/0121088-A1	09-2002	Zuppero et al.	
		US-2002/0196825-A1	12-2002	Zuppero et al.	
	\Box				
					

Examiner Initials*	Cite	Foreign Patent Document FOREIG	Publication	MENTS	
initials	No.'	Courty Code ³ Number ⁴ 'Kind Code ⁶ (# known)	Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear
	-				

Examiner			-L	
Signature		Date		
EXAMINER:	Initial if reference considerations	Considered		

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. Applicant's unique citation designation number (optional). See Kinds Codes of USPTO Patent Documents at www.uspto.gog or MPEP 901.04. Sent Codes of Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. Applicant is to place a check mark here if English language

Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Conflicentality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments and Trademark Office, P.C. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND

17 Your pend assistance in completing the form call 1-800-8TO-9199 (1-800-8T6-9199) and salest action 2

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Uncler	the Paperwork Reduction Act of 1995, no persons are required to	U.S. Patent and Trade to respond to a collection of information	mark Office; U.S. DEPARTMENT OF COMMERCE			
S postitute for form 1449/PTO		Complete if Known				
		Application Number	09/682,363			
IN	FORMATION DISCLOSURE	Filing Date	8/24/2001			
		First Named Inventor	Anthony C. Zuppero			
3	TATEMENT BY APPLICANT (Use as many sheets as necessary)	Art Unit	1753			
	(Use as many sneets as necessary)	Examiner Name	Alan D. Diamond			
Sheet	L. of	Attorney Docket Number	22122878-6			

	OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS					
Examiner Initials*	CRe No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T7			
	8	"Electron-hole pair creation by reactions at metal surfaces", downloaded from www.aps.org/meet/CENT99/BAPS/abs?S6980001.html American Physical Society Centernnial Meeting Program, Atalanta, GA, 20-26 March 1999				
	9	"Electron-Hole Pair Creation at Ag and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium", Physical Review Letters, Volume 82, Number 2. 11 January 1999	\dagger			
	10	^e The Solarex Guide to Solar Electricity ^e Solarex Corporation, Inc. Frederich, MD, pp. 66-67, April 1979	-			
			╁			
			\mid			
			-			
			-			
			-			
			-			
	+		_			
į			 			
xaminer	T	Date	<u> </u>			

Signature

Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231.

PAGE 44/64 * RCVD AT 10/14/2004 5:46:18 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/10 * DNIS:8729306 * CSID:2128913547 * DURATION (mm-ss):34-42

¹ Unique citation designation number. ² Applicant is to place a check mark here if English language Translation is attached.

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Co	emplete if Known
Application Number	09/682,363
Filing Date	8/24/2001
First Named Inventor Art Unit	Anthony C. Zuppero
Examiner Name	1753
Attorney Docket Number	Alan D. Diamond
Tatomey Docket Number	22122878-6

	T	OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	_
Examiner Initials	Cite No.1	item (book, magazine, journal, serjal, symposium, catalog, etc.), date, page(s), volume-issue number(s). publisher, city and/or country where published.	Ī
	1	REE, J. et al., "Dynamics of Gas-Surface Interactions: Reactio of Atomic Oxygen with Chemisorbed Hydrogen on TUNGSTEN,"	+
		Journal of Physical Chemistry, Vol. 101 (#25), pp. 4523 - 4534, June 19, 1997.	
	2	REE, J. et al., "Reaction of atomic oxygen with adsorbed carbon monoxide on a platinum surface," Journal of Chemical	
		Physics, Vol. 104, Issue 2, pp. 742 - 757, January 8, 1996.	ŀ
	3	NOLAN, P.D. et al., "Molecularly chemisorbed intermediates to oxygen adsorption on Pt(111): A molecular beam and electron	-
		energy-loss spectroscopy study," Journal of Chemical Physics, Vol. 111, No. 8, pp. 3696 - 3704, August 22, 1999.	_
	4	NOLAN, P. D. et al., "Translation Energy Selection of Molecular	-
	5	MURPHY, M. J. et al., "Inverted vibrational distributions from	
		molecular chemisorption well," Journal of Chemical Physics, Vol. 110, No. 14, pp. 6954 - 6962, April 8, 1999.	_
	6	KIM, M. S. et al., "Reaction of Gas-Phase Atomic Hydrogen with Chemisorbed Hydrogen Atoms on an Iron Surface," Bull. Korean Chem. Soc., Vol. 18, No. 9, pp. 985 - 994, May 22, 1997.	
		BONN, M. et al., "Phonon-Versus Electron-Mediated Desorption and Oxidation of CO on Ru(0001)," Science, Vol. 285, pp. 1042 - 1045, August 13, 1999.	_

Examine			
Signature		Date	
oignature			
EXAMINER: Inilia	al II reference considered what	Considered	

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the Individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U. S. Patent and Trademark Office, Washington, DC 20231.

DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Oraw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citati xi designation number. ² Applicant is to place a check mark here if English language Translation is attached,

Approved for use through 07/31/2006. OMB 0651 -0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Inder the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number. Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete it Known		
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Attorney Docket Number	22122878-6	

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examiner Initials	Cite No,1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, seriat, symposium, cutalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	72
	8	NOLAN, P. D. et al., "Direct verification of a high- translational-energy molecular precursor to oxygen dissociation on Pd(111)," Surface Science Letters, Vol. 419, pp. 1107	n
		L113, September 24, 1998.	
	9	DAVIS, J. E. et al., "Kinetics and dynamics of the dissociative chemisorption of oxygen on Ir(111)," Journal of Chem. Phys., Vol. 107(3), pp. 943 - 952, July 15, 1997.	e
	10	TRIPA, C. Emil et al., "Surface-aligned reaction of photo- generated oxygen atoms with carbon monoxide targets," Nature, Vol. 398, pp. 591 - 593, April 15, 1999, www.pature.com	-
·	11	SHIN HK, "Vibrationally excited OD Radicals from the Reaction of Oxygen-Atoms with Chemisorbed Deuterium on TUNGSTEN,"	
		Journals of Physical Chemistry, Vol. 102(#13), pp. 2372 - 2380, March 26, 1998.	
	12	TRIPA, C. Emil et al., "Kinetics measurements of CO photo-oxidation on Pt(111)," Journal of Chemical Physics, Vol. 105,	-
		Issue 4, pp. 1691 - 1696, July 22, 1996.	
			•

- 1			
	Examiner		
		Date	
	Signature	Date	i
	[Signatife		
		Considered	1
			1
	45744 h hh hair	Considered	

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the Individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U. S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² Applicant is to place a check mark here if English language Translation is attached.

PTC/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0851-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known				
Application Number	09/682,363			
Filing Date	8/24/2001			
First Named Inventor	Anthony C. Zuppero			
Art Unit	1753			
Examiner Name	Alan D. Diamond			
Attorney Docket Number	22122878-6			

U.S. Patent Document						
Daminer nitials*	Cite No.¹	Number	Kind Code ² (# known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant
	<u>-</u>	3,694,7	70	Burwell et al.	09/26/1972	Figures Appear
					- 	
			1			
						- <u></u> -
			·	· · · · · · · · · · · · · · · · · · ·		
			 -			
	- 					
			 -			
			 -			
						
						
			1_1_			
				•	 	
					 	

				FORE	IGN PATENT DOCUMEN	TS		
Examiner	Cite		Foreign Patent Docu	ment		, 	Pages, Columns, Unes.	
initiats*	No.	Office ³	Number ⁴	Kind Cade ⁵ (# known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Where Relevant Passages or Relevant Figures Appear	7.
		DT	1,230,509		Bleekrode et al.	12/15/1966	Abstract	X
 -		 - -			· · · · · · · · · · · · · · · · · · ·			 ~
		 						†
		-			•			1-
				- - -		-		
							··	L_
					····	 		_
								1

Examirer			
	,	Date	
Signature		Considered	
AE34			!

¹ Unique citrition designation number. ² See attached Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPC Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶/Applicant is to place a check mark here if English tanguage Translation is attached.



Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

^{*}EXAMINET: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

		. Pĩ	O/SB/08A (08-03)
	Approved for use t	hraugh 07/31/20ne	OMB OREL DOOL
Patent and	d Tendomork Office 11	2 25 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	· Cmp 0001-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO

Complete if Known

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

I	Complete if Known				
I	Application Number	09/682,363			
	Filing Date	8/24/2001			
	First Named Inventor	Anthony C. Zuppero			
I	Art Unit	1753			
Γ	Examiner Name	Alan D. Dlamond			
Ι	Attorney Docket Number	22122878-6			

		OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS	
Examine ·	Cita No.1	include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposhum, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	7-2
	3	TRIPA, C. E. et al., "Kinetics measurements of CO photo-oxidation on Pt(111)," J. Chem. Phys., Vol. 105, No. 4, 22 July 1996, pages 1691-1696, especially the disclosure beneath the paragraph header "C. Cross section determination methods" on page 1693.	
<u> </u>	4	NOLAN, P. D. et al., "Molecularly chemisorbed intermediates to oxygen adsorption on Pt(111): A molecular beam and electron energy-loss spectroscopy study," J. Chem. Phys., Vol. 111, No. 8, 22 August 1999, pages 3696-3707, especially figure 9 and the description of figure 9 set forth on page 3702,	
		2nd full paragraph et seq.	\vdash
	5	REB, J. et al., "Reaction of atomic oxygen with adsorbed carbon monoxide on a platinum surface," J. Chem. Phys., Vol. 104, No. 2, 08 January 1996, pages 742-757, particularly the abstract and page 753.	-
_			
			-
			-
			-
			-
.	1		

Examiner			T
		Date	
Signature	•		
		Considered	

Burden Hou Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Weshington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[†] Unique citation designation number. ² Applicant is to place a check mark here if English language Translation is attached.

Under the Paperwork Reduction Act of 1995, no persons are required to a Substitute for form 1449/PTO	Co	PTO/SB/08A (08-0 proved for use through 07/31/2006. OMB 0851-003 emark Office; U.S. DEPARTMENT OF COMMERC atton unless it contains a valid QMB control number amplete if Known
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary) Sheel of	Application Number Fitting Date First Named Inventor Art Unit Exeminer Name	09/682,363 8/24/2001 Anthony C. Zuppero 1753

		II C Pala	10.	U.S. PATENT DOC	UMENTS	
Examiner initials*	Cite No.1	Number	Kind Code ²	Name of Palentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Pasages or Relevant Figures Appear
						
						
					 	<u> </u>
						
					 	
					 	
						
			╌┼╌			
					 	
	\Box				 	
					 	· · · · · · · · · · · · · · · · · · ·
	-					
					T	

				FORE	IGN PATENT DOCUMEN	rs		
Examiner Initials	Cite No.on	e e ³	Foreign Patent Docu Number ⁴	rnent Kind Code ^s (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant	T
	-∸∤	DT	1,230,509		Bleekrode et al.	12-15-1966	Abstract	 x
		- -						†~
						 		\Box
								╀—
		-						┿╾
								†-
			· · · · · · · · · · · · · · · · · · ·					

Examiner		
Signature	Date	
	Considered	
*EXAMINED: Initial II referen		

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231.

DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not

¹ Unique citation designation number. ² See attached Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁸ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁹ Applicant is to place a check mark here if English language Translation is attached.

Under the Paperwork Reduction Act of 1995, no persons are required to Substitute for form 1449/PTO	Cı	omplete if Known	
		Application Number	09/682,363
INFORMATION DISCLOSURE		PF Filing Date	8/24/2001
	_	I FIRE Named Inventor	Anthony C. Zuppero
	ENT BY APPLICA	Art Unit	1753
(Use	ss many sheets as necessary)	Examiner Name	Alan D. Diamond
egt	of	Attorney Docket Number	22122878-6

Examiner	C:-	OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS Include name of the author (in CAPITAL LETTERS), title of the atticle (when appropriate), title of the literal (book, magazine, journal, sortal, so	
Initials.	Cite No.1	publisher, city and/or country where published.	72
	1	DIESING, D. et al., "Aluminium oxide tunnel junctions: influence of preparation technique, sample geometry and oxide thickness," Thin Solid Films 342 (1999), pages 282-290, received 26 February 1998; accepted 11 September 1998.	
			-
	-		
xaminer Signature	Τ	Date	

Considered

Burden Hor is Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

[&]quot;EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique chation designation number. ² Applicant is to place a check mark here if English language Translation is attached.

Under the Paperwork Reduction Act of 1995, no persons a Substitute for form 1449/PTO	re required to respond to a collection of inform	PTO/SB/08A (08-03) proved for use through 07/31/2006. OMB 0651-0031 emark Office; U.S. DEPARTMENT OF COMMERCE ation unless it contains a valid OMB control number
		mplete if Known
MIDO TO THE STATE OF THE STATE	Application Number	09/682,363
INFORMATION DISCLOSU	RF Filing Date	8/24/2001
STATEMENT BY APPLICA	First Named Inventor	Anthony C. Zuppero
(Use as many sheets as necessary)	[· · · · · · · · · · · · · · · · · · ·	1753
oot	. Examiner Name	Alan D. Diamond
of	Attorney Docket Number	22122878-6

		II O Coto		U.S. PATENT DOC	UMENTS	
Examiner Initials	Ctto No.1	Number	Kind Code ²	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MN-DD-YYYY	Pages, Columns, Unes, Where Relevant Passages or Relevant
		6,114,6	20	Zuppero et al.	09-05-2000	Figures Appear
		·				
	~~					
		·				
						
					- 	
			-			
						· · · · · · · · · · · · · · · · · · ·
					+	
	$-\Box$				 	
					 	
						

				FORE	IGN PATENT DOCUMENT	rs		
Examiner	Ciba		Foreign Patent Docu	ment	Name of Patentee or	Date of Publication of	Pages, Columns, Lines,	
initials"	No 1	Office ³	Number ⁴	Kind Code ^s (# known)	Applicant of Cited Document	Cited Document MM-DD-YYYY	Where Relevant Passages or Relevant	70
		WO	01/28677	A1	NeoKismet L.L.C.	04-26-2001	Figures Appear	╁
		wo	00/72384	Al	NeoKismet L.L.C.	11-30-2000		+
		NL	1,065,463	-		04-12-1967		╀
								╆
								
								╀—
		<u>-</u> -				 		╂
								┼—

Examiner		
Signature	Date	
EVANINED Later A	Considered	

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² See attached Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial possible. ⁶ Appli ant is to place a check mark here if English language Translation is attached.

Ur der the Paperwork Reduction Act of 1995, no persons are required to r	Co	PTO/SB/D8A (08-03) proved for use through 07/31/2006. OM8 0651-D31 emark Office; U.S. DEPARTMENT OF COMMERCE pation unless it conteins a valid OMB control number. Dimplete if Known
Sheet of	Application Number Filing Date First Named Inventor Art Unit Examiner Name	09/682,363 8/24/2001 Anthony C. Zuppero 1753

<u> </u>		22122070-0	
		OTHER PRIOR ART - NON PATENT I TO BE A STATE OF THE PRIOR ART - NON PATENT I TO BE A STATE OF THE PATENT I TO BE A STATE OF TH	_
Examiner		OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS	
initiais*	Cite No.1	fiem (book, magazine, journal, serial, symposium, catalog, etc.), date of the article (when appropriate), trile of the publisher, city and/or country where the book, or country where the book is the publisher, city and/or country where the book.	7
	5	G.H. TAKAOKA et al., "Preparation and catalytic activity of nano-scale Au islands supported on Ti02", Nuclear Instruments & Methods in Physics Research, Section - B: Beam Interactions with Materials and Atoms, North-Holland Publishing Company, Amsterdam, NL, Vol. 121, No.1, 1997, pages 503-506,	十
		XP004057973, abstract.	+
	6	P. AVOURIS et al., "Electron-Stimulated Catalysis Device", IBM Technical Disclosure Bulletin, Vol. 25, No. 12, May 1, 1983, pages 6378-6379, New York, IIS XP002210054	1
		No. 12, May 1, 1983, pages 6378-6379, New York, US, XP002219954.	
			†
			+
	7		<u> </u>
	+		
			T
			┢
			-
	+		
ŀ			
	_ _		
			I
miner			
nature		ference considered whether or not slighted in	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will very depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT.SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

¹ Unique citation designation number. ² Applicant is to place a check mark here if English language Translation is attached.

	_		PT	O/SB/	ARO	/08 na	
pproved	for use	through	PT 07/31/2006	OMB	DCE.	100-03	į

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Co	mplete if Known
Application Number	09/682,363
Filing Date	8/24/2001
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-6

		U.S. Patent	Document 1	U.S. PATENT DOC	UMENTS	
Examiner Initials	Cite No.†	Number	Kind Code?	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant
		5,651,83		Fraas et al.	07-29-1997	Figures Appear
	2	5,932,88	5	DeBellis et al.	08-03-1999	
	3	4,753,579	9	Murphy		· · · · · · · · · · · · · · · · · · ·
	4	5,525,04		Deak	06-28-1988	
	5	5,299,42		Nakagawa et al.	06-11-1996	
i	6	5,317,876			04-05-1994	
		•		Nakagawa et al.	06-07-1994	
						
					<u> </u>	
			_+			
						
	_					
	-		 			
	· 					
	 -			•		
-+	 -					
	 -					<u> </u>
					 	

1				FORE	IGN PATENT DOCUMEN	TS		
Examiner Cita			Foreign Patent Docu		None 45 4	Date of Date of	Daniel Direction	
nitials"	No.1	Offices	Number ⁴	(If known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant	
	_ <u> </u>	DT	1,230,509		Bleekrode		Figures Appear	
	•	1 1	,			12-15-1966	Abstract	1 8
						L. 1		1
								4-
						 		┦_
						 		
								T
				 -				+-
								╂
				_ 1 T				<u> </u>
						<u> </u>		
. 1								1
	_			[┺

Examiner			<u> </u>
Signature		Date	
		Considered	
'EXAMINER: Ini	ial if reference considered whether		

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231.

DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

considered. In: the copy of this form with next communication to applicant.

1 United the copy of this form with next communication to applicant.

¹ Unique citation designation number, ² See attached Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 18 if possible. ⁵ Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08A (08-)

I Inder the Paperwork Reduction Act of 1995, no persons are required to Substitute for form 1449/PTO	U.S. Patent and Trade	proved for use through 07/31/2008, OMB 0651-003 emark Office; U.S. DEPARTMENT OF COMMERCIAL
Substitute for form 1449/PTO	_	implete If Known
MEODMATION	Application Number	09/682,363
INFORMATION DISCLOSURE	Filing Date First Named Inventor	8/24/2001
STATEMENT BY APPLICANT (Use as many shoots as necessary)	Art Unit	Anthony C. Zuppero
Shoot	Examiner Name	Alan D. Diamond
Of Of	Attorney Docket Number	22122878-6

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	_
Examiner Initials	Cite No.1	item (book, magazine, journal, serial, symposium, catalog, setc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	7
	8	"Electron-hole pair creation by reactions at metal surfaces", downloaded from www.aps.org/meet/CBNT99/BAPS/abs?S6980001.html American Physical Society Centernnial Meeting Program, Atalanta, GA, 20-26 March 1999	\dagger
	9	"Electron-Hole Pair Creation at Ag and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium", Physical Review Letters, Volume 82, Number 2. 11 January 1999	\dagger
	10	"The Solarex Guide to Solar Electricity" Solarex Corporation, Inc. Frederich, MD, pp. 66-67, April 1979	╁
			-
			-
			H
			-
			_
		,	_
	_		
		,	
miner nature		Date	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Considered

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SENC FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

¹ Unique citation designation number. ² Applicant is to place a check mark here if English language Translation is attached.

Steet

Approved for use through 07/31/2006, OMB 0551-0006

Under the Paperwork Poduction And Annual	Approved for use through 07/31/2006. OMB 0651-003
persons are required	Approved for use through 07/31/2006. OMB 0651-005 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERC Trademark office; U.S. DEPARTMENT OF COMMERC COMMERC IF W. S. DEPARTMENT OF COMMERCE COMMERCE IF W. S. DEPARTMENT OF COMMERCE IF W. S. DEPARTMENT O
Substitute for form 1449/PTO	to a content of information unless it contains a valid OMB content
144011 10	Complete if Known

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Co	omplete if Known
Application Number	09/682,363
Filing Date	8/24/2001
First Named Inventor Art Unit	Anthony C. Zuppero
Examiner Name	1753
Attorney Docket Number	Alan D. Diamond
Cocket Normber	22122878-6

1
4
- }
les, n.,
-
ace
+
+
+
-

4				
I	Examiner			
ļ	Signature	į i	Date	
•	\		Considered	
	*EXAMINER: It like if reforence and it			i

¹ Unique citation designation number. ² Applicant is to place a check mark here if English language Translation is attached.



Burden Hour Siz terment: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief information Officer, Patent and Trademark Office, Washington, DC 20231.

DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

^{*}EXAMINER: It itled if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not

Shee:

Approved for use through 07/31/2006, OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unfess it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known Application Number 09/682,363 Filing Date 8/24/2001 First Named Inventor Anthony C. Zuppero Art Unit 1753 Examiner Name Alan D. Diamond Attorney Docket Number 22122878-6

			U.S. PATE	NT DOCUMENTS	
Examiner Initials	Cite No. ¹	Document Number Number- Kind Code ² (if known	Publication Date MM-DD-YYYY	Name of Palentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant
	البا	us. 6,232,546	05-15-2001	DiMatteo et al.	Figures Appear
	2	us_ 6,396,191	05/28/2002	Hagelstein et al.	
	3	us- 5,057,162	10715/1991	Nelson	
	4	us- 5,593,509	01/14/1997	Zuppero et al.	
		U\$-			
		US-			
		US-			
		US-			
		U8-			
1		US-		······································	
		US-			
		US-			
1		US-			
		US-		<u>-</u>	
-I		US-			
I		US-	~		
	$_{\perp}T$	US-			
		US-			
I		US-			
		US-			

	COD		· · · · · · · · · · · · · · · · · · ·		_
	FOR	EIGN PATENT D	OCUMENTS		-
Examiner initials	 Foreign Patent Document Costor Code 3 - Number 4 - Kind Code 9 (Floroum)	Bublications	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T
					F
					Ē
					E
					L

Examinar	
Signature Date	
Considered	

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Burden Hour Statement: This form is estimated to take 2.0 hours to complete this form should be sent to the Chief Information Officer, U.S. Patent and Commissioner for Patents, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant ...

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 100.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 6 Applicant is to place a check mark here if Burden Hour Statement The form is attached.

Signature²

Approved for use through 07/31/2006. OMB 0851-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Complete if Known

Application Number 09/682,363

Filing Date 8/24/2001

First Named Inventor Anthony C. Zuppero

Art Unit 1753

Examiner Name Alan D. Diamond

Attorney Docket Number

22122878-6

	1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the	
xar iner nitials	Cite No.1	ttem (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	_
	1	PRESE, K. W., Jr. et al., "Hot electron reduction at etched n-Si/Pt thin film electrodes," Journal of the Electrochemical Society, Vol. 141, No. 9, September 1994, pp. 2402 - 2409.	
	2	MAHAN, G. D. et al., "Multilayer thermionic refrigerator and generator," Journal of Applied Physics, Vol. 83, No. 9, 1 May 1998.	
	3	STIPE, B. C. et al., "Atomistic studies of O2 dissociation on Pt(111) induced by photons, electrons, and by heating," J. of Chem. Phys., Vol. 107 (16), October 22, 1997, pp. 6443 - 6447.	
	4	TRIPA, C. E. et al., "Surface-aligned reaction of photogenerated oxygen atoms with carbon monoxide targets," Nature, Vol. 398, 15 April 1999, pp. 591 - 593.	
			1
			1
			†

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Considered

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NO! SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

¹ Unique citation designation number. 2 Applicant is to place a check mark here if English language Translation is attached.

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

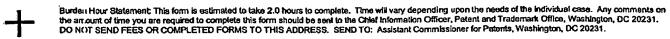
Application Number Filing Date 8/24/2001 INFORMATION DISCLOSURE First Named Inventor Anthony C. Zuppero STATEMENT BY APPLICANT Art Unit 1753 (Use as many sheets as necessary) Examiner Name Alan D. Diamond 22122878-6 Attorney Docket Number Sheet

ستسعب فساعد	r 1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the	
ixam ner nitials	Cite No.1	item (book, magazine, journat, seriat, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T
	1	BONN, M. et al., "Phonon-Versus Electron-Mediated Desorption and Oxidation of CO on Ru(0001)," Science, Vol. 285, No. 5430, Issue of 13 August 1999, pp. 1042-1045.	
	2	DAVIS, J. E. et al., "Kinetics and dynamics of the dissociative chemisorption of oxygen on Ir(111)," J. Chem. Phys., 107 No. 3, 15 July 1997, pp. 943-951.	
	3	GADZUK, J. W., "Hot-electron femtochemistry at surfaces: on the role of multiple electron processes in desorption," Chemical Physics, Vol. 251, year 2000, pp. 87-97.	
	4	GADZUK, J. W., "Resonance-assisted hot electron femtochemistry at surfaces," Physical Review Letters, May 27, 1996, Vol. 76, Issue 22, pp. 4234-4237.	
	5	GE, NH. et al., "Femtosecond Dynamics of Electron Localization at Interfaces," Science, Vol. 279, No. 5348, Issue of 9 Jan 1998, pp. 202-205.	
	6	GAO, Shiwu, "Quantum kinetic theory of vibrational heating and bond breaking by hot electrons," Physical Review B, Vol. 55, No. 3, 15 Jan 1997-I, pp. 1876-1886.	
	7	HOU, H. et al., "Enhanced Reactivity of Highly Vibrationally Excited Molecules on Metal Surfaces," Science, Vol. 284, No. 5420, Issue of 4 Jun 1999, pp. 1647-1650.	
	8	NIENHAUS, H. et al., "Direct detection of electron hole pairs generated by chemical reactions on metal surfaces," Surface Science 445 (2000) pp. 335-342.	
	9	NIENHAUS, H. et al., "Selective H atom sensors using ultrathin Ag/Si Schottky diodes," Applied Physics Letters, June 28, 1999, Vol. 74, Issue 26, pp. 4046-4048.	
	10	GAILLARD, Frederic et al., "Hot electron generation in aqueous solution at oxide-covered tantalum electrodes. Reduction of methylpyridinium and electrogenerated chemiluminescence of Ru(bpy) 32+," Journal of Physical Chemistry B., Vol. 103, No. 4, January 28 1999, pp. 667-74.	
	11	ENGSTROM, Ulrika and RYBERG, Roger, "Comparing the vibrational properties of low-energy modes of a molecular and an atomic adsorbate: CO and O on Pt (111)," Journal Of Chemical Physics, Vol. 112, No. 4, 22 January 2000, pp. 1959-1965.	

Examiner	Date	
Signature	Considered	

^{*}EXAN INER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Unique citation designation number. 2 Applicant is to place a check mark here if English language Translation is attached.



PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of informations it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known			
Application Number	09/682,363		
Filing Date	8/24/2001		
First Named Inventor	Anthony C. Zuppero		
Art Unit	1753		
Examiner Name	Alan D. Diamond		
Attorney Docket Number	22122878-6		

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examilner nitlais	Cite No.1	include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T2
	12	NOLAN, P. D. et al., "Molecularly chemisorbed intermediates to oxygen adsorption on Pt (111): A molecular beam and electron energy-loss spectroscopy study," Journal Of Chemical Physics,	
		Vol. 111, No. 8, 22 August 1999.	
	13	NOLAN P. D. et al., "Direct verification of a high- translational-energy molecular precursor to oxygen dissociation on Pd(111)," Surface Science Vol. 419,	
		pp. L107-L113, December 24, 1998.	
	14	OTTO, Andreas et al., "Role of atomic scale roughness in hot electron chemistry," Journal of Physical Chemistry B, Vol. 103, No. 14. April 8, 1999, pp. 2696-2701.	
	1.5	PLIHAL, M. et al., "Role of intra-adsorbate Coulomb correlations in energy transfer at metal surfaces," Physical Review B, Vol. 58, No. 4, July 15, 1998, pp. 2191-2206.	
	16	SUNG, Yung-Eun et al., "Enhancement of electrochemical hot electron injection into electrolyte solutions at oxide-covered tantalum electrodes by thin platinum films," Journal of	
		Physical Chemistry B., Vol. 102, No. 49, December 3 1998, pp. 9806-11.	
	17	ZHDANOV, V. P. et al., "Substrate-mediated photoinduced chemical reactions on ultrathin metal films," Surface Science, Vol. 432 (#3), pp. L599-L603, July 20, 1999.	
	18	NIENHAUS, H., "Electron-hole pair creation by reactions at metal surfaces," American Physical Society, Centennial Meeting Program, March 20-26, 1999, Atlanta, GA, Session SC33 - Metal Surfaces: Adsorbates. http://www.aps.org/meet/CENT99/BAPS/	
	19	NIENHAUS, H et al., "Electron-Hole Pair Creation at Ag and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium," Physical Review Letters, Vol. 82, Issue 2, January 11, 1999, pp. 446-449.	

Examiner		Date	
Signature	•	Considered	
Cignotaro			

^{*}EXVMINER: Initial III reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² Applicant is to place a check mark here if English language Translation is attached.



Burken Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the innount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (08-03)

Approved for use through 07/31/2006. OMB 06\$1-0031

S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

		since, c.c. Dei sattimetal Of	
Under the Paperwork Reduction Act of 1995, no persons are required to r	annual in a collection of information ur	water it contains a valid OMD	
Under the Pacerwork Reduction Act of 1995, no persons are required to r	aspond to a conscion of information of	HOSS IL CONTRAINS & VAIRO CAME C	omroi numoe
Original and a particular and a particul			

	itute for form 1449/PTO	Complete if Known		
Subst	Rute for form 1449/F10	Application Number	09/682,363	
	CONTACTION DISCUSSIBLE	Filing Date	8/24/2001	
	FORMATION DISCLOSURE	First Named Inventor	Anthony C. Zuppero	
ST	ATEMENT BY APPLICANT	Art Unit	1753	
	(Use as many shoots as necessary)	Examiner Name	Alan D. Diamond	
Choot	of J	Attorney Docket Number	22122878-6	

	NTS		
Т2	te), title of the sue number(s),	Cite No.1	xanılner nitia s
3;	chnique, sample ved 26 February 1998;	1	
\dashv	was a second of the second of	-	
		er	Examina
			Examine

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609.	Draw line through citation if not in conformance and no
concil ered include come of this form with next communication to applicant	

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

¹ Unique citation designation number. ² Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08A (08-03)

Approved for use through 07/31/2006, OMB 0851-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Complete If Known Substitute for form 1449/PTO Application Number 09/682,363 Filing Date 8/24/2001 INFORMATION DISCLOSURE First Named Inventor Anthony C. Zuppero STATEMENT BY APPLICANT 1753 Art Unit (Use as many sheets as necessary) Examiner Name Alan D. Diamond Attorney Docket Number 22122878-6

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examin ¥ initials	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T 2
	ī	AGRANOVICH, V. M. et al., "New concept for organic LEDs: non-radiative electronic energy transfer from semiconductor quantum well to organic overlayer", Elsevier Science, Synthetic Metals, 2001, Vol. 116, pages 349-351.	
			1
Examine Signatur		Date Considered	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademerk Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

¹ Unique citation designation number. 3 Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08A (08-03)

Alan D. Diamond

Under the Paperwork Reduction Act of 1995, no persons are required	U.S. Patent and Trait to respond to a collection of infon	pproved for use through 07/31/2008. OMB 0851-00 demark Office; U.S. DEPARTMENT OF COMMERC mation unless it contains a valid OMB control number
Sub stitute for form 1449/PTO	C	complete if Known
	Application Number	09/682,363
INFORMATION DISCLOSURE	Filing Date	8/24/2001
	First Named Inventor	Anthony C. Zuppero
S'TATEMENT BY APPLICANT	Art Unit	1753
(Use as many sheets as nocessary)	Examiner Name	Alon D. Dieses

Examiner Name

Sheet Attorney Docket Number 22122878-6 of U, S. PATENT DOCUMENTS Examiner Cite Vo. **Document Number** Publication Date Name of Patentee or Pages, Columns, Lines, Where Relevant Passages or Relevant Initials* Applicant of Cited Document Number-Kind Code^{2 (f Innered} Figures Appear US-6,537,829 03-2003 Zarling et al. El US-6,444,478 09-2002 Morgan, Christopher Grant US-6,399,397 C; 06-2002 Zarling et al. E: US-6,312,914 11-2001 Kardos et al. G, US-6,251,687 06-2001 Buechler et al. н US-6,238,931 05-2001 Buechier et al. US-6,159,686 12-2000 Kardos et al. US-5,891,656 04-1999 Zarling et al.

		FORE	IGN PATENT DOCU	MENTS		
Examiner nitials*	Cite No.1	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines,	Г
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)	MM-DD-YYYY	Approach of Orea Document	Where Relevant Passages Or Relevant Figures Appear	Т
						L
						┝
				· · · · · · · · · · · · · · · · · · ·		L

				-
Examinor		154		_
Signature		Date		
CIRTIGUE		Considered	i	
	Difficility of the contract of			

considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not *EXAMINEN: Initial if reference considered, whemer or not clauton is in conformance with MPEP duy. Draw line through clauton in not in conformance and not considered, include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.18 if possible. ⁶Applicant is to place a check mark here if English language

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentially is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-788-9199) and select option 2.

PTO/SB/08A (08-03)

	- 21221000 (00-02)
Approved for use through 07/31/200	OMD MEL SON
	J. OMB 0001-0031
U.S. Patent and Trademark Office; U.S. DEPARTMEN	TOE COMMERCE
didne and Trocoman Chico, C.S. DEFARTMEN	OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to n	espond to a collection of inform	nation unless it contains a valid OMB control number			
Su stitute for form 1449/PTO	Complete if Known				
•	Application Number	09/682,363			
INFORMATION DISCLOSURE	Filing Date	8/24/2001			
	First Named Inventor	Anthony C. Zuppero			
STATEMENT BY APPLICANT	Art Unit	1753			
(Use as many sheets as necessary)	Examiner Name	Alan D. Diamond			

Attorney Docket Number 22122878-6

U. S. PATENT DOCUMENTS Examiner Cite No.1 Document Number Publication Date Name of Patentee or Pages, Columns, Lines, Where Relevant Passages or Relevant MM-DD-YYYY Applicant of Cited Document Number-Kind Code^{2 (9 knowl)} Figures Appear Α US-2003/0207331 11-2003 Wilson et al. 8 US-2003/0166307 09-2003 Zuppero et al. US-2003/0100119 C 05-2003 Weinberg et al. D US-2003/0030067 02-2003 Chen, Wei E US-2003/0019517 01-2003 McFarland, Erick W. G US-2002/0121088 09-2002 Zuppero et al. US-2002/0070632 06-2002 Zuppero et al. US-2002/0045190 04-2002 Wilson et al. US-2002/0017827 02-2002 Zuppero et al. US-6,700,056 03-2004 Zuppero et al. US-6,649,823 M 11-2003 Zuppero et al. US-

		FORE	IGN PATENT DOCU	MENTS		
Examiner Initials*	Cite	Foreign Patent Document	Publication Date	Name of Patentee or	Pages, Columns, Lines,	Г
		Country Code ³ Number ⁴ Kind Code ⁸ (if known)	MM-DD-YYYY	Applicant of Cited Document	Where Relevant Passages Or Relevant Figures Appear] 7
			 			F
					, , , , , , , , , , , , , , , , , , , ,	┝
						一
			1			F

Examiner				
		Date		
Signature		Considered	1	
		Considered	1	
*EYAMAKED	billial is enforced according to			

*EXAMINER: hillal if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 'Applicant's unique citation designation number (optional). 'See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 'Senter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 'For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 'Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 'Applicant is to place a check mark here if English language

Translation is a tached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or rotain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the Individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND

To: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Steet

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Inder the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Co.	mplete if Known	
Application Number	09/682,363	
Filing Date	8/24/2001	
First Named Inventor	Anthony C. Zuppero	
Art Unit	1753	
Examiner Name	Alan D. Diamond	
Altomey Docket Number	22122878-6	

Examiner Initials*	Cite No. ¹	Document Number Number-Kind Code ^{2 (Minoum)}	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	Α	US-5,763,189	06-1998	Buechler et al.	
	В	US-5,736,410	04-1998	Zarling et al.	
	С	US-5,698,397	12-1997	Zarling et al.	
	D	US-5,674,698	10-1997	Zarling et al.	
	ε	US-5,632,870	05-1997	Kucherov, Yan R.	
		US-	T		
****	· ·	US-	 	A 1	
		US-			
		US-			
		US-			
		บร-			
		US-	 		
		US-	<u> </u>		
		US-			
		US-			
		US-	 		
		US-	 		

Examiner	Cite	Foreign Patent Document	IGN PATENT DOCU	Name of Patentee or	Pages, Columns, Lines,	т
Initials*	No.'	Country Code ³ "Number ⁶ "Kind Code ⁵ (if known)	MM-DD-YYYY	Applicant of Cited Document	Where Relevant Passages Or Relevant Figures Appear	7
		WO 01/28677A1	04-2001	Zuppero et al.		
		JP-02157012A	06-1990 -			┞
			 -i			Ļ

Examiner	,	Date	
Signature		Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. Applicant's unique citation designation number (optional). See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). For Japanese patint documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. Applicant is to place a check mark here if English language Translation is attached. Translation is attached.

Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND

To: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.